

THE JOURNAL OF
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EDUCATION**



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IN TWO PARTS—PART I

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INFORMATION FOR CONTRIBUTORS

The *Journal of Medical Education* serves as an important international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education or any aspect of it; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. It is especially interested in educational experiments and pertinent reports from other educational fields. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

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Editorials are invited, for the expression of opinions on significant problems or for highlighting an important program or a significant new development. Editorials are reviewed by the Editorial Board, and should be limited to 750 words or less.

News from the Medical Schools: Member schools are urged to send "News from the Medical Schools" items on expansion, modernization, important faculty appointments, teaching experiments, course changes, innovations, etc. Grants for education and training and for construction should be mentioned. The listing of other than major research grants is not encouraged. This material should be received by the first of the month preceding publication.

Correspondence: Address all correspondence regarding manuscripts, news, editorials, announcements, and all letters to the Editor to the Editorial Office, University Hospitals, University of Wisconsin, Madison 6, Wisconsin.

Address all correspondence concerning subscriptions, reprints, changes of address, and back numbers to the Publications Office, 2530 Ridge Avenue, Evanston, Ill.

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American Academy of General Practice, Municipal Auditorium, Dallas, Texas, March 24-27. Mr. Mac. Cahal, Volker Blvd., at Brookside, Kansas City 12, Mo., Executive Secretary.

American College of Surgeons, Regional Meeting, Hotel Utah, Salt Lake City, March 17-19. Dr. Alfred M. Okelberry, 115 E. South Temple, Salt Lake City 11, Chairman.

International Congress of Internal Medicine—April 24-26, 1958; Sheraton Hotel, Philadelphia.

Fifth Annual meeting of the Society of Nuclear Medicine, Los Angeles, California, Beverly Hilton Hotel, June 19-21, 1958.

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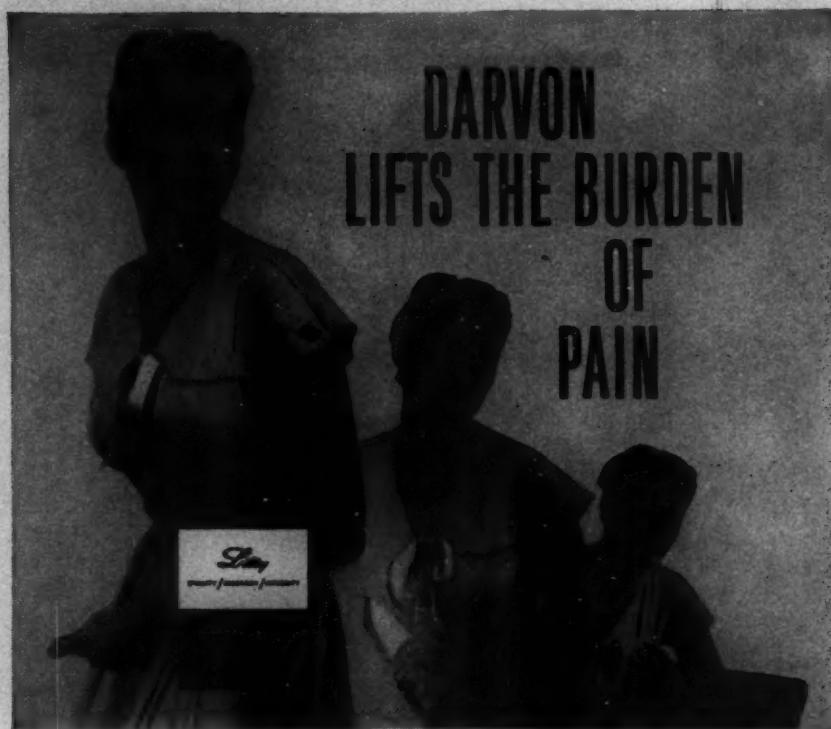


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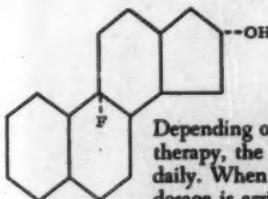
1. Rein, C. R., Fleischmajer, R., and Rosenthal, A. L.: J. A. M. A. 165:1821, (Dec 7) 1957.
2. Shelley, W. B., and Pillsbury, D. M.: Personal Communication.
3. Sherwood, A., and Cooke, R. A.: Personal Communication.
4. Freyberg, R. H., Berntsen, C. A., and Hellman, L.: Paper presented at International Congress on Rheumatic Diseases, Toronto, June 25, 1957.
5. Hartung, E. F.: Personal Communication.
6. Schwartz, E.: Personal Communication.
7. Sherwood, A., and Cooke, R. A.: J. Allergy 28:97, 1957.
8. Hellman, L., Zumoff, B., Kretshmer, N., and Kramer, B.: Paper presented at Nephrosis Conference, Bethesda, Md., Oct. 26, 1957.
9. Ibid.: Personal Communication.
10. Barach, A. L.: Personal Communication.
11. Segal, M. S.: Personal Communication.
12. Cooke, R. A.: Personal Communication.
13. Dubois, E. L.: Personal Communication.

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99 In this experiment at the National Heart Institute a researcher compiles data on the work of breathing. He is studying resistance to air flow within the respiratory passages of a model human lung.

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Basic studies such as this are advancing our understanding of the physics and chemistry of normal and impaired pulmonary ventilation. Lakeside Laboratories, Inc., Milwaukee 1, Wisconsin.



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 LAKESIDE

Medical Education in India—A Challenge*

C. G. PANDIT, Ph.D., D.T.M.†

IT WAS WITH a feeling of satisfaction and not a little pride that I have witnessed the remarkable way in which the Medical College, at Lucknow, has been developing into a great educational institution. I have been particularly impressed by the high premium placed by the authorities of this College on research and by the number and variety of research projects that are now in progress here, for one can now hardly deny the mutually stimulating and enriching effects of research upon the quality of teaching and vice versa. It is in recognition of the academic atmosphere prevailing in this medical college that the Fellowship program, jointly sponsored by the Indian Council of Medical Research and the Rockefeller Foundation, was inaugurated about 3 years ago. Since then, an increasing number of fellows have been sent for training in the various departments of the college. This institution is now about to embark, with the generous help of the Rockefeller Foundation, on a new venture—the institution of an internship program—which is going to have profound influence on the progress of medical education in the country. The trends in evidence here fill one with the hope that in the not too distant future the medical sciences in this

country will be on a par with those in some of the most highly developed countries for significant advances and maximum service to the people.

PROGRESS OF MEDICAL EDUCATION

The beginnings of this movement are already clearly discernible. More and more medical colleges are being opened up. Medical education has caught the imagination of the public as perhaps no other professional pursuit has. Research has become a magic word. Science is on the lips of everyone—politicians, administrators, business and professional men alike. Even philosophy is now being regarded by some as a science and interpreted in terms of scientific principles. By the application of the scientific method, which includes observation, experiment, and induction, the study of those intangible human values, such as culture, motivation, attitudes, etc., is being drawn into the realm of science, and the social sciences have now become a distinct "genus." Enlightened governments are devoting vast sums of their revenues to support anything that spells science. Our own Government is becoming increasingly alive to the need for support of scientific research, be it in industry, engineering, agriculture, or medicine, and has taken several bold steps in this direction. As many are probably aware, the Planning Commission recently brought together a panel of scientists in many disciplines to discuss and suggest

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measures by which the national resources could be exploited to serve and promote the welfare of India's teaming millions during the Second Five-Year-Plan period.

In the midst of this rapidly changing national scene there is a danger of losing one's perspective and one's sense of historic values; there is a danger that enthusiasm for doing big things in a big way, a truly noble aim in itself, might even blur our vision and result in relegation to the background of the need for a calm and objective appraisal of the results of our efforts and of the quality of the products of our labors. We call our medical education a "university education," and our students at the end of their study receive a university degree, and yet many years of association with medical education and research in this country have prompted me to inquire repeatedly: Are our medical students being educated in the true liberal tradition of a university? Are they exposed to the intellectual ferment and humanizing influence of a university education? Are we sending forth through the portals of our universities men and women whom we might call "physicians" in the time-honored meaning of that word, physicians who, in addition to recognizing accurately and treating effectively human ailments, also possess the imagination, resourcefulness, and ideas to deal with unexpected situations? Do our physicians have an intelligent understanding of man in relation to his environment? I have searched for an answer to these questions which I believe are of fundamental significance; and the more I reflect, the more I comprehend that the answer may be, by and large, in the negative. We all agree that if the aims of medical education are to be fully

realized it must be given in the atmosphere of a university, and I have always looked upon Lucknow as the one center, in the 40 odd medical colleges in India today, where education is imparted in a university setting. I am happy to learn that, in spite of the new constitution, this special feature is not going to be materially affected, and I hope the college will not only maintain but also stimulate further the university atmosphere for which this institution is justly famous.

Thus, I propose to examine briefly our present medical educational system, particularly in its relationship to the university—a problem which I believe constitutes the most important challenge to medical education in our country. In dealing with this subject I wish to pose two questions and attempt to answer them. What is the existing relationship between our medical colleges and the universities, and what should it be?

THE MEDICAL EDUCATIONAL SYSTEM

A brief consideration of the evolution of our system at once reveals how isolated our medical colleges are, both physically and intellectually, from the university centers of learning. Through an historical accident we happened to adopt the British system, which had been characterized as the clinical type of education. Medical schools both in England and France grew out of hospitals, and in the early days students attached themselves to physicians and surgeons, followed them through their practice, and learned medicine by seeing it practiced. The schedule of the medical apprentices in those countries consisted merely of work in the hospitals and attendance at the morgue for learning the principles of normal and morbid

anatomy. Anatomy was taught by surgeons and physiology by physicians. In the course of time, as medicine progressed and various new disciplines emerged, this simple arrangement had to give way to a more complex organization. The new disciplines could no longer be handled by the practicing clinicians. They had to be taught by persons who had made a special study of them. The system thus became gradually complex as new subjects were introduced into the curriculum, until we arrive at the composite medical school of today, with its numerous preclinical and clinical departments. In spite of the enormous growth of the basic and preclinical sciences, until recently the emphasis centered around hospitals, and the Hospital Boards enjoyed considerable power and influence over the educational system. I shall have occasion to refer to the recent trends in the British system a little later.

Here in India we followed the clinical type of education as it had evolved in England. Our medical colleges and schools were built around large hospitals in big cities, and up to a point our system had also developed in the same manner as the British system. We had, however, one factor peculiar to our country: Medical education from its early days was a responsibility of the State; medical colleges and schools were run by the medical departments of Governments; medical service in the large State hospitals was given free of charge. While direct State control of teaching centers ensured financial stability, it also had its weak points. I think you will all agree that no governmental department, however liberal in its outlook, can create that atmosphere of academic freedom and scholarship which flourishes so nat-

urally in a university setting. Doctors recruited to the medical colleges for teaching purposes were on par with those sent out to the districts for medical relief and were liable to frequent transfers. Even within the college different assignments were given at different times to the same teachers. It was not uncommon then to see a professor of physiology teaching hygiene next and medicine still later. The net result was a serious break in the continuity of teaching. Promotions depended more upon seniority of service than upon scientific achievements of the teachers. All this, of course, was inevitable in view of the crying need for medical relief and the acute shortage of trained personnel; but the over-all effect of this policy had been, I believe, that medical education was unable to fulfill its aims as completely as it should have.

This type of training did, no doubt, pay rich dividends. It served a useful purpose at the time when it was introduced, when the need for qualified doctors was most acute and when medicine was still largely in the realm of empiricism and art. Today, however, when medicine has extended its frontiers into almost every sphere of human activity, when its affairs are becoming more and more involved in the physical, social and biological sciences and in the humanities, it is high time that we ask ourselves the question whether the true aims and objects of medical education are being fulfilled by the vocational outlook which our medical education system still largely possesses.

Systems cannot, of course, stifle the emergence of truly great intellects. In spite of the practical bias in the British and French systems of medical education in the early years,

medicine progressed remarkably in those countries, and individuals appeared from time to time who, by their work, revolutionized it. At a time when French medicine was hopelessly confined within the hospital system, a Claude Bernard, a Louis Pasteur, and a Laennec appeared on the medical horizon. Similarly, in England, Stokes, Addison, Hughlings, Jackson, and many others have reported several discoveries of great moment. However, as long as the system persisted, maximum opportunities were not available for potential talent to come to the surface.

In recent years there has been a tremendous revival of interest in medical education and a searching of hearts. Both in England and America far-reaching changes have been introduced in the medical educational system. Several bold and revolutionary experiments in medical education are now in progress in the United States. In England, one of the most significant developments of particular interest to us in this country which has followed, as I have already stated, the British system, is the transfer to the universities of the responsibility for conducting the training of medical students. The well-known Goodenough Committee on Medical Schools stated in 1944 that at that time all but four of the medical schools in Great Britain were university medical schools. The report went on to say, "Medicine is a branch of human thought and activity that demands and provides opportunities for the fullest development of humanistic and scientific talents. It is a branch of higher learning and the most favorable training ground for those who follow it is in the recognized centers of higher learning—the universities." The Commit-

tee further stated that "Our recommendation that undergraduate medical education should be confined to university medical schools involves either the absorption of the existing non-university medical schools by the appropriate universities or the cessation of undergraduate teaching by those schools."

It is somewhat sad to reflect that this vital revolutionary trend has not yet taken root in our country. Our medical colleges are no doubt attached to the universities, but the attachment is very superficial. Its main business appears to be the supervision of examinations and the laying down of the curriculum. Our Academic Councils and Boards of Studies have concerned themselves mostly with devising bare outlines of the curriculum and seldom with the fundamental principles which should govern the relationships of the different departments of the university to those of the medical school. When new medical colleges are built, there is a tendency to be swayed by the pressure of popular feeling about their location rather than to be responsive to the needs, aims, and objectives of medical education. Some of you may remember that about 6 years ago we had with us a distinguished medical educationist, Dr. Allen Gregg, who had a look at our educational system. In his report, he remarked that "the nature of relationships between medical colleges and universities are depressingly formal, tenuous and unproductive."

It is now universally accepted that the aims of medical education should be: "(a) to guide the medical students to such development of mind and character as will enable them to give maximum service to the community; (b) to develop in them the ability to observe accurately, reason

logically and assess the claims of new knowledge; and (c) (but no less important) to develop a sympathetic understanding of people in their environment."

Where else are these aims to be fulfilled, if it is not in the universities? We all subscribe to the view that, traditionally, universities are the places where knowledge is pursued for its own sake irrespective of considerations of practical application; where science and scholarship flourish in an uninhibited and imaginative manner; where new ideas are constantly born and reared; and, above all, where medicine will have abundant opportunities for cross-fertilization with the other disciplines of the university. Cardinal Newman's idea of a university enunciated nearly a hundred years ago is extensively quoted on occasions such as this. Seventy-five years after Newman's exposition, Abraham Flexner, the man who did so much to catalyze medical education in the United States, defined the functions of a modern university as: (a) the conservation of knowledge and ideas, (b) the interpretation of knowledge and ideas, (c) the search for truth and (d) the training of students. Flexner believed that the most important function of a university was "the intensive study of phenomena under the most favorable possible conditions—the phenomena of the physical world, of the social world, of the aesthetic world and the ceaseless struggle to see things in relation."

THE UNIVERSITIES AND MEDICAL EDUCATION

I would say that the universities would be able to fulfill their function more completely if they had the opportunity to be closely associated

with medical education. Strange as it may seem, it is perhaps in the kingdom of medicine that the maximum number of disciplines traditionally associated with the universities have a significant and very often decisive influence. The natural sciences, the social sciences, and the humanities have made and are continuing to make important contributions to the progress of medicine. We now insist quite rightly on training in the principles of biology as a prerequisite for admission to medical colleges, but I am afraid the concept of biology that is imparted to the students very often fails to convey the significance of biology to medicine. Some botany and some zoology do not constitute "biology."

A cursory glance at the contributions that a university department of botany can make to the growth of medicine at once provides a striking illustration of the point I am laboring to make. Historically, botany has functioned in intimate association with medicine in the classification and study of plants of medicinal value. We have not yet exhausted over the centuries the nuggets of gold that can still be obtained from this association. We must still rely upon emetine and digitalis in the treatment of human illnesses, and not so very long ago there were bright prospects of producing cortisone from plant material. The medicinal plants listed in our ancient systems of medicine have yet to be completely explored and exploited. In investigating the structure of protoplasm and its molecular organization, the botanist and the medical research worker have to work together, with no boundary line dividing them.

Or again take, as an example, the contributions of a university depart-

ment of zoology. Zoology has as one of its major concerns an understanding of the physiology of reproduction, of sex determination, of genetics and evolution. These subjects are equally significant to medicine. Every little advance that is made in the realm of zoology has its impact upon some aspect or other of human medicine. Fundamental discoveries in the physiology of vision in man came from the biology departments of universities which were interested in a study of the visual process in fish.

It is unnecessary for me to emphasize the contributions of the physics and chemistry departments of a university to the advance of medicine. Physics and chemistry form the backbone of biological and medical sciences and provide precision to them. With their aid it has become possible to measure in quantitative terms the various processes characteristic of living matter both in the normal and in the abnormal state. Some of the fundamental problems confronting us today such as the nature of viruses, the structure of nucleo-proteins, the molecular organization of protoplasm are largely in the realm of one or another of the sub-divisions of physics and chemistry.

I would like to refer at this stage to two disciplines which have been claiming increasing attention in the universities today, namely, psychology and anthropology. In finding answers to the ever-increasing spectrum of psychosomatic illnesses of man, medicine is once again in heavy debt to the nonmedical psychology divisions of universities. Psychiatry as a discipline is still in its infancy. At its present level of development, it is far too imperfect to meet the challenge of the problems in human relations. It has to absorb and assim-

ilate the vast amount of knowledge which had already been accumulated in psychology laboratories on such subjects as maturation, perception, learning, memory, etc.

Anthropology is defined as the study of man in the widest sense. As knowledge increases, subdivisions and specialization seem to be inevitable consequences; and so in the case of anthropology we now have a number of subdivisions, such as physical anthropology, cultural anthropology, social anthropology, and so on. Whatever be the precise meanings of these terms, they do signify a growing interest in this field. India is a veritable anthropological mine, and, particularly in the field of medical anthropology, it offers unlimited opportunities for work in the understanding of the background of disease and the influence of heredity on disease processes.

I have, doubtless, failed to mention several other departments of the university whose work has a direct or indirect impact upon medicine; but I have said enough, I hope, to convey how closely interrelated are the workings of a university with the aims of medical education.

The truth is that medicine is the biggest parasite on other branches of natural and biological sciences. It takes more out of them than it can give them in its turn. The nonmedical and basic science departments of universities form the advancing front of medicine, and today in the United States the main burden of teaching in the medical schools in the basic sciences is shared by the nonmedical departments. Thus, it has been stated that, out of 371 men who were teaching anatomy, physiology, biochemistry, pharmacology, and bacteriology in the medical schools of Yale, Harvard, Johns Hopkins, Chicago, and

California between 1946 and 1949, 229—in other words nearly 60 per cent—had no medical degree. I am afraid the importance of this trend in medical education, namely, the increasing reliance both in research and in teaching upon nonmedical departments of universities, has not yet been fully realized in our country.

Indeed, if we are to fulfill the aims of medical education, we have no other alternative than to strive to effect a more intimate association between the medical colleges and universities, to bring something of the university atmosphere into colleges and with it a certain amount of flexibility and autonomy in their administration. The task at first sight appears insurmountable—the colleges are under the control of governments, while universities are independent and autonomous bodies. More often than not, the colleges are separated from universities by vast distances. In spite of these obstacles, however, I venture to submit that the problem is not insoluble. With the cooperation of governments, universities, and educators, it should be possible to devise some measures by which we should be able to reach our cherished goal. I do not for a moment suggest that the medical colleges should immediately cut themselves away from the harness of governments and go under the umbrage of the universities. Even if that were possible, I would not recommend it, since our universities are not yet prepared to receive the medical colleges and hospitals into their fold and to integrate them into their general structure. The change has to be effected gradually, allowing time for adjustments to be made on all sides.

THE NEED FOR CHANGE

The first change I would plead for is a greater measure of autonomy and elasticity in the administration of medical colleges than obtains at present. Higher education is peculiarly allergic to restrictive influences and red tape. The investment of all executive power in the medical department of the government, with its seat in the State capital, frequently results in inordinate delays in communicating decisions. The introduction of the system of deans and principals has not resulted in any appreciable decentralization of power either in the matter of routine administration or in matters of policy. Besides, it is not certain that the administrative head of the medical department will invariably be a person who has a sensitive understanding of the requirements of medical education. In order to bring more autonomy, I would suggest that each college should be under the control of a Governing Body on which are represented, besides financial experts and administrators, men who have wide knowledge and experience of medical education. I would also suggest that a special provision should be made in the Governing Body for representatives of the university to which the college is attached, representatives who are men of such stature that they are competent to speak with authority on behalf of the university. In this way it should be possible to bring the universities into closer contact with colleges and to permit them to impart something of their outlook and philosophy to the colleges. I may mention that this was one of the ways by which England integrated her medical schools with universities, and I should think that this one measure alone will have

a far-reaching effect on our educational system.

In this effort, the students too have a responsible part to play. Some of you may remember that the Medical Education Conference convened by the Government of India in November last year recommended that a certain proportion of the time of the students should be elective time, in which they are allowed to do whatever they liked to do. They cannot of course play golf in that time, but they are free to go to any department of the college they like and take part in any studies to which they are attracted. I would suggest that the non-medical departments of a university, including the humanities, should be opened to medical students, in which to spend their elective time. This would be one way of opening the flood-gates of university learning to the gaze of medical students.

Another way of increasing the points of contact between the medical colleges and universities would be to encourage, wherever geographical factors permit, the teaching of basic sciences by teachers from the nonmedical departments of the universities and vice versa. In many institutions abroad, this practice already exists.

Finally, to this list, I would add one more idea: There is no single master plan of medical education capable of application in every part of the world. Each nation has to evolve its own system, depending upon its traditions, its educational systems, its cultural background, and its requirements. The growing unrest in med-

ical education in several parts of the world today is indicative of a feeling of discontent over the inadequacies of existing systems. Here in India, we have to evolve our own system suitable to our native genius. We cannot do this unless we take risks and experiment with ideas. There is no sense in all the 40 odd medical colleges' blindly copying, till the end of time, the rigid departmental educational system that we have inherited. One of the main functions of the newly established All-India Institute of Medical Sciences in Delhi is to explore ways and means by which the present system can be improved. I do not see why this function should be restricted to the All-India Institute alone. There is ample scope and an urgent need for adopting a similar experimental approach in other colleges in the country. The Governing Bodies for which I pleaded earlier would be the appropriate agencies to sponsor such experiments in their respective medical institutions.

I would conclude this with the hope that it is not beyond our resourcefulness to bring about a closer integration of the medical colleges and their associated teaching hospitals with their respective universities. I am not worried so much about physical integration. In the ultimate analysis integration should be in men's ideas. I can do no better than to conclude with an invocation from the Rigveda, which I would like to dedicate to the universities and medical colleges and to the teachers and students in them:

॥ एवं तद ते एव एव ॥

॥ एवं तद ते एव एव ॥

"Alike be your feelings; unified be your hearts, common be

your intentions, perfect be your unity." Rig Veda—X.191.2-4

An Inquiry into the Value of Rank Grades in the Medical Course

AVRAM GOLDSTEIN, M.D.*

TRADITIONAL LETTER or number grades are shorthand expressions for the standing of students in relation to their classmates in a hierarchy of ranks that are alleged to reflect relative knowledge of the several subjects. The purpose of this paper is to subject the system of ranking grades to critical scrutiny on the basis of data gathered in a pharmacology course, first at Harvard (1952-55), then at Stanford (1955-57). We shall conclude that ranking grades in a medical course are fallacious, contribute nothing positive, foster undesirable student attitudes, and are dispensable.

EXPERIMENTS

Experiment 1.—The purpose of the experiment was to see with what precision an essay-type examination could be graded. One hundred and thirty students were examined. The examination consisted of a single 1-hour question. The staff of nine instructors agreed to score only according to a predetermined set of written rules, ignoring such factors as style and handwriting. Basic points were allowed for each major item covered, additional points for specified elaborations. Every paper was read and scored independently by three instructors according to a random alternation plan. Examinations were

identified by code numbers, not by student names. Instructors made no annotations on the papers and kept their own scoring secret until all the grading was completed.

The distribution of raw scores is shown in *Figure 1a*. The datum for each student is the mean of scores assigned by the three instructors. This appears to be a satisfactory curve for rank grading. It skews typically to the left, setting off a "very poor" group from the rest. It shows an adequate spread within the roughly symmetrical portion of the distribution. The range between the lower and upper interquartile points is 14.5, which is 23 per cent of the median score of 62.5.

Figure 1b displays the distribution of discrepancies for each student's score. Each datum represents the difference between the highest and lowest score independently assigned to a student's paper. This discrepancy was 15 points or greater (i.e., larger than the lower-upper interquartile range) for 35 per cent of the class. In other words, one-third of the students were subject to a rank shift amounting to two full quartiles, depending upon which instructor graded their examinations. Moreover, these discrepancies could not be accounted for by errors of one or a few instructors but occurred haphazardly among all nine instructors. There were five discrepancies of greater

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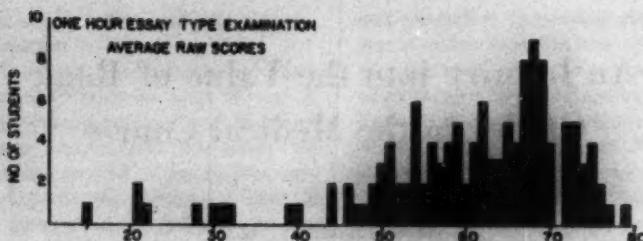


FIGURE 1a. Distribution of raw scores derived from Experiment 1.

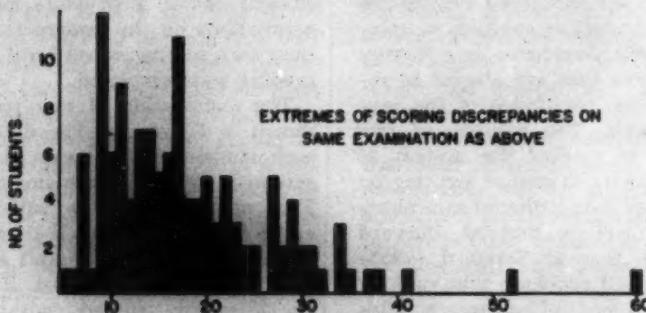


FIGURE 1b. Distribution of discrepancies for each student's score.

than 32 points; the lowest scores assigned to these students would have placed them in the bottom tenth of the class, while their highest scores would have placed them above the median.

In this experiment an essay-type question was graded far more carefully and objectively than is usually attempted. Nevertheless, for one-third of the class the instructors disagreed by more than the equivalent of a whole letter grade and for some students the disagreement was substantially greater. Sinclair⁴ cites a more remarkable experiment in which the same instructors assigned quite different grades to identical papers presented on two occasions. It would appear, therefore, that any but the grossest ranking of students

on the basis of essay-type questions is so imprecise as to be meaningless.

Experiment 2.—The purpose of the experiment was to see with what precision an oral examination could be graded. Fifty-nine students were examined. The questions ranged freely over the whole content of the course. There were five examining teams consisting of three instructors working individually, and two teams of two instructors each. A random rotation system was employed whereby each student was examined twice, 20 minutes at each sitting. Performance was rated on a predetermined numerical scale, with the following simple definitions: 1, outstandingly superior; 2, distinctly above average; 3, average; 4, below average but definitely satisfactory;

5, unsatisfactory. Written examination data were not available to the instructors at the time of the oral examination, and oral examination scores were not exchanged until all the students had been examined.

Figure 2a shows the distribution of mean scores assigned to each stu-

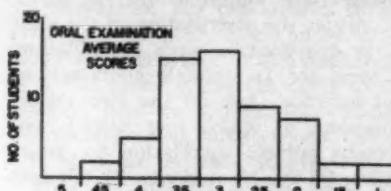


FIGURE 2a. Distribution of mean scores derived from Experiment 2.

dent by the two independent examining teams. Figure 2b shows the distribution of discrepancies between the two teams examining each student. For 58 per cent of the class there was a discrepancy of at least one scale point, and for 10 per cent of the class the disagreement amounted to two scale points. The

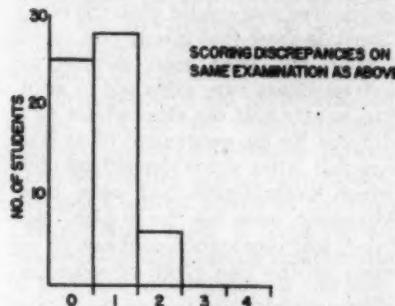


FIGURE 2b. Distribution of discrepancies.

scale used here corresponds roughly to the usual definition of the letter grades A, B, C, D, E. More than half the students might therefore have received ratings that differed by at least one full letter grade depending

upon which instructors examined them. The ranking of six students would have differed by the equivalent of two full letter grades. It would appear, therefore, that any but the grossest ranking of students on the basis of an oral examination is so imprecise as to be meaningless.

Experiment 3.—The purpose of the experiment was to ascertain the relationship between student rank on objective-type and essay-type questions covering the same material. An hour examination on autonomic and cardiovascular pharmacology was divided equally into objective and essay parts. These were then graded independently by different instructors. The scoring system allowed for five possible scores on the essay part and for a continuum of scores on the objective section.

Figure 3 shows the distribution of scores for each of 137 students on both sections of the examination. A few students had very high or very low scores on both criteria, but for

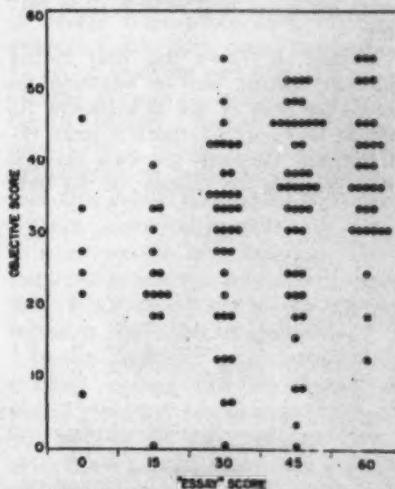


FIGURE 3. Distribution of scores for 137 students derived from Experiment 3.

the class as a whole no correlation is apparent whatsoever. It follows that, for a given subject matter, the student's rank grade would be greatly influenced by the type of examination used. The same inference can be drawn from the very low positive correlation found between essay- and objective-type scores on National Board examinations in pharmacology and in medicine.¹

Experiment 4.—The purpose of the experiment was to ascertain the relationship between student rank on a written examination and on an oral examination covering the same material. A class of 59 students was examined orally (as described above) and also by a 3-hour written examination containing questions of the objective, short-answer, and essay types. The 16 written questions were distributed among seven instructors for grading according to a system of weighted numerical scores. The papers were identified only by code number. Each student's mean written score was then compared with his mean oral examination rating.

Figure 4 shows the oral rating plotted against written examination score for each of the 59 students. As might be expected, there is some relationship between the two ratings. For example, no student in the bot-

tom quartile of written scores ranked in the top quartile of oral ratings; likewise no student in the bottom quartile of oral ratings ranked in the top quartile of written scores. On the other hand, for most of the class no valid prediction of rank standing on one examination could be derived from rank standing on the other. Consider the distribution of the class into quartiles on each examination. There are 16 possible combinations of quartile rank on the two examinations, of which four would represent perfect correlation by quartiles. Of the 59 students, 34 fell into this category. On the other hand, 20 had a rank discrepancy of one quartile, and five students differed by two quartiles. Even at the extremes, if we pick out the bottom seven students on each examination, we obtain two groups containing only two individuals in common; while if we pick out the top four students, we obtain two groups with only one individual in common.

There is no manifest reason why either type of examination should be considered more valid than the other. The data show that if only one examination had been used, despite the extraordinary care exercised in grading, nearly half the class would have differed by the equivalent of at least one full letter grade depending upon which examination had been used. Moreover, even the "very high" and "very low" students would not be the same on the two types of examination.

DISCUSSION

The results described here will not surprise teachers of medicine who have given serious study to the problem of student evaluation through examination. The data may be summarized as follows:

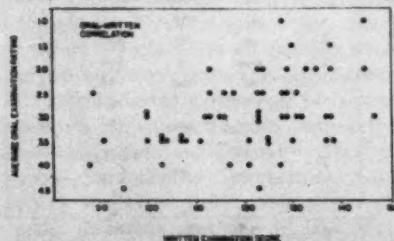


FIGURE 4. Oral ratings plotted against written exam scores for 59 students (Experiment 4).

Even if examinations (of whatever type) are corrected with extraordinary care and attempted objectivity, the resulting grades are greatly influenced by uncontrolled variable factors. Very often a student's rank grade has little to do with his knowledge of the subject relative to that of his classmates. The precision of rank grading is so poor, even under optimal circumstances, that differences of a full letter grade (in an A to E system) may be meaningless, while the finer grading subdivisions (B-, C+, etc.) are patently absurd.

Why do ranking grades have so little meaning in a medical school class? Primarily, I believe, because an artificial "spread" is being forced upon a highly selected and fairly homogeneous group. Examinations can readily be constructed to yield broad enough score distributions for rank grading. To invent an extreme example, let us devise questions dealing with such abstruse topics as the history of Chinese herbology, the curricula vitae of outstanding pharmacologists, the influence of alchemy upon the development of modern pharmacology, the acidic dissociation constants of substituted barbiturates, the therapeutic doses of 50 selected drugs, and so on. The resulting spread of scores could then be broken down into letter grades, percentiles, and lower cut-off points in the customary way. Such a rank order, however, would bear no relationship to practical competence in the subject of pharmacology. Class ranking (and the letter or number grades which are a shorthand for ranking) may be quite appropriate at lower educational levels where there exist substantial differences in both intellectual capacity and motivation, but may be inappropriate at medical school where the students are a pre-

selected upper group and motivation is universally high. This has long been recognized in other university graduate courses where rank grades are not customarily employed.

The argument may be advanced that, despite its fallacies, a system of ranking grades is useful, because if a student accumulates enough grades in different subjects "the truth will out"—i.e., errors of as much as one or even two full letter grades may occur here and there, but in the end the better student will have the higher "grade point average." This argument rests upon two unproved and very doubtful assumptions: (a) that the average of many fallacious grades will in fact be more valid than the individual grades, as measured against some objective external criterion; and (b) that class rank based on such averages bears any predictive relationship whatsoever to subsequent performance in the various career fields open to the medical graduate. One might well doubt the second assumption *a priori*; for it is clearly improbable that such an average would have equal predictive value for students who will variously become surgeons, internists, public health officers, family physicians, psychiatrists, industrial toxicologists, radiologists, or laboratory investigators. One study⁸ has shown that competence in general practice correlates to some extent with previous class standing in medical school, but even this weak relationship disappears within a few years of graduation.

If the standard examination and grading system did no harm, it would probably not be worth changing, despite its shortcomings. However, there is little doubt that a large measure of the chronic anxiety and excessive competitiveness of medical students are direct products of this

system. During the past two years, while other courses have been graded in the usual way (A to F), we have employed a simple satisfactory-unsatisfactory system. At the end of the course, each student was asked to indicate his reaction to our grading system on an anonymous questionnaire. In one class, 57 of 59 students and in the other class 41 of 43 students replying expressed a preference for the satisfactory-unsatisfactory system. This nearly unanimous response was amplified by the large number of spontaneous written comments indicating strong feelings about the competitive pressure to achieve grades in other courses, and the welcome relief from this pressure in pharmacology. Similar student attitudes have been noted elsewhere.² It might be asked whether or not the students worked as hard when the motivation had to be generated internally and stimulated by the staff rather than by competition for grades. Students in one class were asked (on the same anonymous questionnaire) "Do you honestly feel that you studied as hard and as much in this course as you would have under the usual examination and grading system?" Seventy per cent replied affirmatively, some asserting they had put more effort into the course than they would have otherwise. Thirty per cent replied negatively, some of these pointing out that concurrent courses graded in the usual way necessarily commanded a disproportionate share of their time.

What should we require of an examination and grading system in medical school? One question has to be answered on an absolute basis for every student: Does he have sufficient knowledge and understanding of a subject to allow him to proceed without further required work? The

problem of deciding this lower cut-off point is in no way simplified or altered by systems which rank the remainder of the class. The decision must be made for the individual student about whose knowledge, judgment, or capability there is doubt. In standard grading systems this is the old problem of drawing a line between D and E (or F), or at some approximate lower percentile point below which students are judged inadequate. To resolve uncertainty here "in favor of" the student by assigning him a D is misguided generosity, for this grade merely stigmatizes him without forcing any remedial action. If a marginal student is capable of mastering a subject, he should be compelled to improve his understanding by additional study. If he proves incapable of adequate performance after such extra study, his medical career might best be terminated promptly.

The data presented here indicate that several different kinds of examinations should be employed in weeding out the unsatisfactory group. Through oral as well as mixed types of written examinations we isolate those students who do uniformly poorly and assign the *unsatisfactory* grade liberally. These students have then to be re-examined at the beginning of the next academic year, as a condition to further progress with their class.

When the unsatisfactory grades have been assigned, as described above, we make no effort to rank the remainder of the class. It may be argued that very superior students should be identified by some sort of honor grade. Perhaps this would help, at the end of the medical school years, to identify the exceptionally capable students for various purposes. We feel, however, that such

students identify themselves in a practical way during the whole course of their studies. The clinicians are surely able to identify on the wards and in the clinics those students who display such skill, intellect, and judgment as to deserve the most sought-after internships. Pre-clinical faculty necessarily come into contact with students of exceptional research ability through student research opportunities in the departments. It would appear that practical decisions affecting a student's future should be based upon the impression gained by the preclinical faculty if he is to make a career of research in the basic sciences, or on his performance in the wards if he elects a clinical career. A combined grade point average or a class standing may very well obscure proper appraisal.

CONCLUSIONS

Much of our criticism of rank grading has already been effectively voiced. (2, 3)

Examinations should be regarded primarily as exercises for the student's benefit, in testing his own knowledge, and as teaching devices whereby the importance of certain principles or relationships can be brought emphatically to the student's attention. Examinations must also serve as screening instruments for enforcing adequate minimum standards in two ways: by compelling further study of a subject by marginal students capable of profiting thereby, and by eliminating from medical school students who are basically unable to meet the standards. Examinations should not be employed as ranking instruments, and ranking grades should be abolished, for the following reasons elaborated above: first, because ranking grades are demonstrably

fallacious; second, because ranking grades are of no proved value in predicting future ability in the numerous fields of endeavor open to the medical graduate; third, because a system of ranking grades fosters unhealthy competitiveness and chronic anxiety which negate those constructive attitudes most conducive to graduate study. Our own good experience with them leads us to advocate the employment of only two grades, *satisfactory* and *unsatisfactory*, the latter denoting a "condition" which must be removed by further study and re-examination if the student is to continue his medical course.

REFERENCES

1. COWLES, J. T., AND HUBBARD, J. P. *J. Med. Educ.* 27: 14, 1952.
2. MARSHALL, M. S. *To Grade or Not to Grade.* *J. Higher Educ.* 23: 264, 1952.
3. SINCLAIR, D. C. *Medical Students and Medical Sciences.* London: Oxford University Press, 1955.
4. SINCLAIR, D. C. *Objective Examination Papers in the Medical Curriculum.* *Lancet* 2: 947, 1953.
5. PETERSON, O. L.; ANDREWS, L. P.; SPAIN, R. S.; AND GREENBERG, B. G. *An Analytical Study of North Carolina General Practice 1953-1954.* *J. Med. Educ.*, Volume 31; No. 12, Part 2, December, 1956.

El valor de las calificaciones escalonadas en los cursos médicos

Las tradicionales calificaciones escalonadas (letras o números) se usan para determinar el rango de cada estudiante dentro de la clase, estableciendo así una jerarquía que, según se alega, refleja también el conocimiento relativo de cada uno en las varias materias. El propósito del presente trabajo es someter tal sistema de calificaciones a un examen crítico. Su autor, Jefe del Departamento de Farmacología de la Escuela de Medicina de Stanford, basa su investigación en los datos recogidos en los cursos de Farmacología en Harvard (1952-55) y en Stanford (1955-57), donde se llevaron a cabo una serie de experimentos a fin de determinar el grado de precisión que tales calificaciones alcanzan en los varios tipos de exámenes (ensayo escrito; contestaciones, por escrito,

de preguntas objetivas; pruebas orales). Se describen cuatro experimentos (que consistían, esencialmente, en mostrar discrepancias en las calificaciones dadas a un mismo estudiante en esos varios exámenes sobre, más o menos, las mismas materias), y los resultados son analizados en este informe, llegándose a la conclusión de que las calificaciones escalonadas, en los cursos de Medicina, son "engañosas, no aportan nada positivo, y estimulan en los estudiantes actitudes indeseables." Por tanto, dice el

autor, se deben suprimir, y en su lugar debería adoptarse el uso de tan solo dos notas: *satisfactorio* e *insatisfactorio*, indicando esta última una condición que habría de remediarself mediante un estudio más intensivo por parte del estudiante, y nuevos exámenes, si éste quiere continuar la carrera médica.

Separadas del artículo completo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

Stockton Kimball, M.D.

1902-1958

The Association of American Medical Colleges wishes to express the deep regret of its members on learning of the death, on Friday, February 7, of Dr. Stockton Kimball, dean of the University of Buffalo School of Medicine and treasurer of the Association.



As an educator, Dr. Kimball made significant contributions to the entire field of medical education and practices. Under his leadership as dean, the University of Buffalo School of Medicine rapidly developed its education and research activities and participated actively in experiments of national significance in medical education.

While chairman of the Joint Committee on Medical Education in National Emergency, he was responsible for expressing to the government and other agencies the importance of medical education to national defense.

In his role as treasurer, and as a member of the Executive Council, he made valuable contributions to the programs of this Association.

The following resolution was adopted:

Be it RESOLVED, that the Association of American Medical Colleges, extends to the family of Dr. Kimball as well as to the faculty of the University of Buffalo School of Medicine, our feeling of loss and deep sympathy.

Dr. Kimball was born August 17, 1902 in Buffalo, N. Y. He received his B.S. degree from Harvard in 1924 and his M.D. (cum laude) from the University of Buffalo in 1929. Dr. Kimball interned at the Buffalo General Hospital from 1929-30 and at Guy's Hospital, London, England from 1931-32. From 1932-33 Dr. Kimball studied under Dr. L. Aschoff, Freiberg, Germany, as instructor in pathology.

He returned to Buffalo and joined the faculty of the Buffalo University School of Medicine as assistant professor of medicine and associate in pharmacology. In 1944 he was appointed assistant dean and in 1946 he was appointed dean.

The University of Buffalo School of Medicine has announced the establishment of the Dean Stockton Kimball Memorial Fund. This fund will be used for student scholarships and contributions will be welcomed.

The Role of Research in the Medical Curriculum*

VERNON W. LIPPARD, M.D.†

CONSIDERING THE AUDIENCE to which this discourse is addressed, it would be presumptuous of me to discuss the importance of research among the activities of a medical school. That it is one of the major responsibilities of a faculty is now accepted, and its influence on the quality of instruction is well recognized. I seriously doubt, however, that, in the majority of American medical schools, the full value of this activity is being transmitted to the average medical student.

In the structure of American universities, the medical school is classified as a graduate school. The opportunity to participate in research is one of the distinguishing features of graduate education, and one of the principal requirements for a graduate degree in other disciplines is the presentation of a dissertation based on original research. Medical schools, on the other hand, have tended to a more vocational orientation, with major emphasis on acquiring the skills necessary for the clinical practice of medicine. Certainly, this phase of medical education cannot be neglected, but there is little evidence to support the contention that capacity for research and skill

as a clinician are mutually exclusive attributes—in fact, the inquiring mind is probably one of the most desirable characteristics of a physician.

It is estimated that by 1975, the production of physicians must increase annually from the present level of about 7000 to about 9000, if the same ratio of physicians in our expanding population is to be maintained. Whether this demand is to be met by establishment of new schools or increasing the enrollment of those in operation, a proportional increase in full-time faculty members will be necessary. The majority of these men will have been qualified for the M.D. degree in an American school, and it seems in order to give some thought as to how they are to be prepared for this responsibility.

The demand for medical investigators, within and without the medical faculties, is even more obvious. Support for medical research has increased from \$40 million to \$240 million in the 15-year period 1940-1955,⁴ and the amount is greater each year. A large portion of this investment goes for salaries of the people who have the ideas. Some of them will be recruited from those who qualify for the Ph.D. degree in the medical sciences, but the majority will have been medical students.

However, more important than the

*Read at the 68th Annual Meeting of the Association of American Medical Colleges, Atlantic City, New Jersey, October 22, 1957.

†Dean, School of Medicine, Yale University.

shortage of technically qualified personnel or the jobs that there are to be filled is the simple fact that higher education should be concerned primarily with the intellectual development of the individual student. We are just beginning to realize that we have at our disposal some of the best minds our society can produce. If we fail to give them the opportunity to develop their potentialities to the fullest extent, our job is only half done.

With these several considerations in view, faculties are beginning to give more thought to the position of the research program in the medical curriculum. Curiosity is contagious, and as more adequate numbers of full-time faculty members are appointed and more equipment becomes available, more and more students find their way into the corner of a research laboratory during the academic year. Furthermore, the summer vacation, which medical students formerly devoted to miscellaneous activity, is gradually being absorbed into the educational program. Availability of summer research scholarships, approximately 650 from governmental and voluntary national health agencies plus an unknown number from local sources in 1957, is creating new opportunities for intensive investigation.

THE YALE PROGRAM

In the development of student research programs at other schools, the experience at Yale over the past 118 years may be of interest. The first evidence that a thesis or dissertation was considered a requirement for the degree of Doctor of Medicine is a statement in the catalogue for 1839 which reads as follows:

The requirements of candidates for the degree of Doctor of Medi-

cine are three years of study for those who are not Bachelors of Arts, and two years for those who are; attendance upon two full courses of lectures, either at this or some similar institution; the attainment of twenty-one years of age, and a good moral character; together with satisfactory examination before the Board of Examiners for the State, at which the candidate must present a dissertation on some subject connected with the medical sciences.

Whether there was a similar requirement during the previous 26 years the school was in operation is not known, but it has been maintained since 1839 except for the period 1879-1887 and during the accelerated program of World War II.

Most of the graduates of the Class of 1839, seventeen in number, presented dissertations on such subjects as dysentery, chlorosis, the color of the skin, and epilepsy, but one incipient psychiatrist wrote on "Hope as a Remedial Agent." Random examination of the dissertations presented over the next 80 years reveals a gradually increasing interest in experimentation and a decreasing incidence of case reports and reviews of literature.

During the period 1920-1925, a unique program of medical education, which has become known as the "Yale Plan," was inaugurated.⁸ One of the features of this program is the presentation of a dissertation, based on original investigation, as one of the major requirements for graduation.

The student is expected to conceive his own problem and to select the faculty member under whom he will work. This step may be taken in the 1st, 2d, or 3d year—most frequently, toward the end of the second. Obviously, this requires some guidance, because the average stu-

dent has a tendency to underestimate the labor involved and his choice of a supervisor may be inappropriate for his problem. The initial conference results in further definition of the problem or referral to another faculty member whose investigative interests are more closely related to those of the student. Once the field of investigation is decided upon, there usually follows a rather intensive exploration of the pertinent literature and occasional conferences with the supervisor until the protocol is developed. At this point, the student is assigned to a corner of the laboratory of his supervisor. The development of a central facility for this purpose has been avoided intentionally, because one of the significant by-products of this program has been the intimate association between the senior investigator and the student which may extend far beyond the confines of his problem. Incidentally, we believe this to be the most effective faculty advisory plan which can be devised, because it brings together a faculty member and student with common interests in a manner which cannot be duplicated when they are assigned by roster.

From this point on, the investigation follows the usual course. Techniques are developed, new channels are explored, and, as is often the case with more experienced investigators, a sideline proves to be more exciting or profitable than the original design. Depending upon the nature of the problem, there are periods of intensive work and other times when there is comparatively little activity. The research goes on during free periods, week-ends, and vacations.

The curriculum is arranged to provide 3 unassigned afternoons each week during the preclinical years

and a block of 12 weeks or two blocks of 6 weeks each in the clinical years which the student devotes entirely to this purpose or to a combination of research and elective courses. The majority in recent years have also spent 1 or more summers in the laboratory, and an average of about 8 per cent of the members of each class have interrupted their program for a year of intensive research at Yale or another laboratory in this country or abroad.

Utilization of the summer vacation period for this purpose has been especially profitable, because it has given the student an opportunity for concentrated effort not possible during the school year. For financial reasons, remaining in residence during the summer would be a hardship for some, but this difficulty has been overcome by the provision of scholarships sufficient to cover living expenses. Local research funds and fellowships can usually be found to cover the cost of the extra year for those who need assistance.

The completed and bound dissertation, approved by the supervisor and the chairman of the department in which he has worked, is presented prior to the faculty meeting at which degrees are recommended. Many of the reports are reviewed while in progress, or on completion, at departmental seminars, and a few are selected for presentation at open meetings of the faculty and the student body.

We have failed to exploit, as extensively as may be possible, the opportunities which this program offers for instruction in biometry. Beginning this year, it is our plan to have each student go over his problem, from a statistical standpoint, with a biometrist. The first conference, or series of conferences, will be ar-

ranged when he is planning his investigation. With the contact thus established, subsequent conferences can be held as indicated, including a final meeting when the data is assembled and before the dissertation is written. This appears to be a practical method of arousing interest in a scientific method which is often neglected in the medical curriculum.

It may be of interest to those planning the development of similar programs to know more of the nature of the investigations pursued in recent years. The departments in which students have chosen to work over the past 5 years are shown in Table 1.

TABLE I
DISTRIBUTION BY DEPARTMENTS
(Graduates 1952-1956)

Anatomy	13
Biochemistry	13
Physiology	24
Pharmacology	13
Microbiology	14
Pathology	62
Internal Medicine	63
Surgery	63
Pediatrics	40
Obstetrics and Gynecology	16
Psychiatry	8
Public Health	5
History of Medicine	6
Other Sciences	3

It is interesting to note that over the years there is a fairly even distribution of interest in working in the basic medical sciences and clinical fields.

The nature of their interests is shown more clearly in Table 2 where investigations over the same 5-year period are analyzed by subject. (Obviously, there is some overlapping in these categories, but each investigation was assigned to the area of major interest.) The wide variety is apparent, ranging from highly technical fields to the exploration of

TABLE 2

DISTRIBUTION BY TOPICS
(Graduates 1952-1956)

Neoplasia	45
Biochemistry including metabolism	40
Infection and immunity	39
Action of pharmacologic agents	38
Cardiovascular and respiratory systems	32
Surgical methods	29
Nervous system	26
Endocrines	25
Behavior	11
Hematology	11
Reproductive system	10
Embryology	8
Gastrointestinal system	7
Visual and auditory systems	5
Medical history	6
Other	11

Arabic manuscripts. The large majority, however, chose a problem which involved work in a research laboratory. The results of 29 per cent of student investigations over this period have been published in national scientific journals.

We have tried to remain aware that a class of medical students is made up of people with a wide variety of personalities and interests and that participation in research should be an exciting experience and not drudgery. Consequently, students have been encouraged to select not only their problems and supervisors but also to determine within a considerable range the extent of their investigations. Thus, those more practically inclined may settle for analyses of a series of medical records and autopsy protocols and the related literature. Over the past 5 years approximately 10 per cent of the dissertations have fallen in that category. At the other extreme, an equal or larger number have turned in reports which from the standpoint

of both quality and scope would have been considered acceptable as Ph.D. dissertations in one of the basic medical sciences.

APPRAISAL OF ITS VALUE

It is difficult to establish tangible proof of the value of this program, although it is hard to conceive that it does not have some influence on the participants. Certainly there has been no deliberate effort on the part of the faculty to induce students to enter specialized practice or academic careers; yet a great many have followed that course. I do not claim this is desirable for all schools, but it is a reality in our situation. A recent study by Dickinson shows that Yale stands among the top four schools in the percentage of graduates in the period from 1920 to 1949 who were, at the end of that period, certified by the Specialty Boards.¹ Probably the best analysis of the distribution of graduates of American medical schools in full-time teaching and research is that of Diehl, West, and Barclay² which lists Yale among the three schools, the largest percentage of whose graduates, over the period of from 1925 to 1949, entered careers in academic medicine and research.

It has often been argued that requiring all medical students to participate in research is a waste of effort, because only a small percentage will make it a career. Here we encounter the old debate concerning the extent to which the medical curriculum should be oriented vocationally. It is our contention that opportunity to explore critically the literature in a limited field, to learn something about the experimental method, to bring an investigation to a conclusion and write a report, to know the strengths and limitations

of biological research, to have curiosity stimulated, and to work intimately with the faculty enhance the competence of a physician and make him a better citizen of the medical world.

We do not believe that the same results can be obtained when research opportunities are presented on an elective basis. Few students enter medical school with the intention of becoming medical scientists, and a certain amount of persuasion may be necessary to stimulate their interests in that direction. Once launched, some of those who seem at the outset to be the least interested become the most enthusiastic investigators.

For the success of a student research program, certain resources are essential, and I would include among them extensive research facilities, a high faculty-student ratio, and enthusiastic interest of the faculty. These resources are available or obtainable in many American medical schools. We must never lose sight of the fact that the primary function of an educational institution, and particularly that of a medical school, is to awaken and develop the individual to the limit of his intellectual powers so that he may exercise them for the benefit of his fellow man. Whatever we can do to keep medical education on an individual basis, and this is one approach, should be worthy of our most sincere effort.

REFERENCES

1. DICKINSON, F. G. A Study of Medical School Alumni. *J.A.M.A.*, 160: 473-84, 1956.
2. DIEHL, H. S.; WEST, M. D.; AND BARCLAY, R. W. Staffing Patterns at Four-Year Medical Schools. *J. Med. Educ.*, 27: 309-15, 1952.

3. LIPPARD, V. W. The Yale Plan of Medical Education after Thirty Years, *J. Med. Educ.*, 29: 8, 17-23, 1954.
4. SHANNON, J. A., AND KIDD, C. V. Medical Research in Perspective, *Science*, 124: 1185-90, 1956.

La investigación científica y el currículum de los estudiantes de Medicina

Aunque en las Facultades de Medicina se ha reconocido siempre la importancia para la Educación Médica de las investigaciones científicas, la instrucción universitaria suele estar orientada en forma tal que sirve principalmente para preparar a los estudiantes a adquirir conocimientos y habilidades necesarios para la práctica de la Medicina. En el presente trabajo (conferencia leída en Atlantic City, el 22 de oct. 1957, ante la *Association of American Medical Colleges*), el Dr. Vernon W. Lippard, Decano de la Escuela de Medicina de Yale, destaca la necesidad de asignar a la investigación científica un lugar más eminente dentro de la Educación Médica. La capacidad para la investigación, cree el Dr. Lippard, no sólo no es incompatible con las habilidades clínicas prácticas, sino que "la mente inquisitiva es probablemente una de las más deseables características de un buen médico". En los últimos años se ha notado, dentro y fuera de las Escuelas de Medicina, una creciente demanda de investigadores médicos; pero una razón más importante para estimular la investigación científica que la escasez de científicos y de personal técnico, es el hecho de que la tarea primordial de toda educación superior ha de ser el desarrollo intelectual de los alumnos. Estas son las consideraciones que se

hallan en la base del llamado "Yale Plan," un programa de educación médica introducido en dicha Universidad entre 1920 y 1925. De acuerdo con ese plan, la presentación de una disertación *basada en investigación original* es uno de los principales requisitos para adquirir el título de M.D., lo cual trae consigo, necesariamente, una orientación hacia la investigación científica de todo el *curriculum*. En el presente artículo se describen diferentes investigaciones estudiantiles a que dió lugar el *Yale Plan*, y se muestran, mediante varias tablas estadísticas, cuáles fueron los campos predilectos de los estudiantes de la Escuela de Medicina de dicha Universidad entre 1952 y 1956 (Medicina Interna, Cirugía, Patología y Pediatría). En sus conclusiones, el Decano de la Escuela trata de apreciar los resultados de dicho programa, y aunque advierte la dificultad de establecer pruebas tangibles de su valor, el éxito queda indicado por un reciente estudio (véase F. G. Dickinson: *A Study of Medical School Alumni*, en *J.A.M.A.*, 160:473-484, Febr. 1956) en el que aparece Yale, por la calidad de sus graduados médicos, durante el período de 1920-1949, entre las cuatro Escuelas de primera fila. Ese éxito es atribuido por el autor, no obstante los varios argumentos en contra, al carácter *obligatorio*, y no *electivo*, de las investigaciones científicas estudiantiles que el *Yale Plan* trajo consigo. Aunque también es esencial, dice el autor, para el éxito de un tal programa, disponer de buenas y amplias facilidades de investigación, de un elevado porcentaje de instructores con respecto al número de estudiantes, y de un interés entusiasta por parte del profesorado.

* * *

Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un *minimum* de 25 lectores.

The Rochester Student Fellowship Program

LEONARD D. FENNINGER, M.D.*

THE PHILOSOPHY that medical students are graduate students who should be given the opportunity to develop their scholarly interests as laboratory colleagues of senior teachers and investigators resulted in the establishment of student fellowships as an integral part of the educational program early in the development of the school of medicine at Rochester. Student fellows were, in fact, selected from the first class admitted to the new school. Although the number of fellowships offered and the disciplines in which they may be taken have increased, the fundamental nature of the fellowships has changed little since they were first offered in 1926.

Fellowships are awarded to students who have applied or have been invited by one of the departments to participate in the fellowship program. Selection is based on the ability and scholarly potential of the students. The student fellow spends a full year in advanced study and research as a junior member of the department of his choice, participating, according to his interests, in all the activities of the department. These include investigation, teaching of medical students and graduate students, and participation in seminars, departmental routine, conferences, and rounds. Each student has the opportunity to work with mem-

bers of the faculty in an informal and intimate setting.

Although it is possible for student fellows to be enrolled in the graduate school of the university as candidates for advanced academic degrees, fellows are under no obligation to do so. All possible freedom is given to the student to develop his own program independently. The year is one of unstructured, individual learning and intellectual exploration.

Student fellows are given the opportunity to live in the staff house, bringing them in close touch with the resident staff. Fifteen fellowships are offered each year, the stipend being \$2000 for 12 months.

IMPORTANCE OF THE PROGRAM

The faculty has considered the student fellowship program to be one of the most significant aspects of the educational opportunity offered at Rochester. It is difficult to determine precisely what influence the program has had on the student fellows themselves and on the school as a whole, but it has been possible to examine the careers of former student fellows and to compare their activities with those of other graduates of this school. Table 1 summarizes the current activities of all graduates receiving their degrees prior to 1953 who did not participate in the student fellowship program. The majority of students who have received their degrees since 1952 are still in

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TABLE 1
SUMMARY OF CURRENT ACTIVITIES OF ALL GRADUATES
WHO DID NOT PARTICIPATE IN STUDENT FELLOWSHIP PROGRAM

Graduates (exclusive of student fellows) 1929 through 1952	1144
Not active in medicine	40
Graduates considered in study	1104
Full-time University appointments	124
Full-time research Institute appointments	11
Directors of Education in hospitals	1
Hospital or Medical Center administration	1
Full-time Public Health directors	3
Private practice or other	964

educational programs and are therefore not included in this study.

It is evident that an appreciable number have chosen careers in academic medicine and research. One hundred and thirty-five, more than 12 per cent of the graduates who did not participate in the student fellowship program, are currently active in teaching and research on a full-time basis.

Almost 9 per cent of all students who have attended this school have participated in the fellowship program. There have been 154 student fellows since the program began. Of these, 52 are still in school or in residency programs. Six are no longer active in medicine. Table 2 summarizes the activities of all former student fellows who received their medical degrees prior to 1953. Of the 96 former student fellows who have been out of school 5 years or more, 30 are in full-time teaching and research. An additional ten have full-time positions associated with hospitals or departments of public

health. Fifty-three of the 56 practitioners have limited themselves to the practice of a specialty.

The basic sciences, with the exception of biochemistry, and the major clinical fields except psychiatry and surgery, were represented in the fellowships selected by these former student fellows. Most fellowships were taken at the end of the 2d year. Some students elected them at the end of the 1st or 3d year, however, and in an occasional instance a student fellow pursued his program for an additional year. All were taken at Rochester, although in recent years several students have taken them abroad.

With the exception of pathology, the field in which the fellowship was taken has had relatively little influence on the discipline pursued after graduation. The majority of former fellows now in academic medicine are in clinical departments.

A relatively high proportion of all graduates of this school have become full-time teachers and investigators

TABLE 2
ACTIVITIES OF FORMER STUDENT FELLOWS

Former student fellows graduating from 1929 through 1952	96
Full Time University appointments	25
Full Time Research Institute appointments	5
Directors of Education in hospitals	3
Hospital or Medical Center administration	3
Full Time Public Health directors	4
Private Practice or other	56

whether they accepted a student fellowship or not. Former student fellows have chosen academic and research careers 2½ time as frequently as other graduates. We have become increasingly interested in attempting to identify factors which may be responsible for this difference.

EFFECTS OF THE FELLOWSHIP

It seemed particularly worth while to find out how former student fellows viewed their fellowship experiences, their reasons for accepting one in the particular department which they chose, the effects of the fellowship on their subsequent education and professional activities, the aspects of the fellowship which seemed in retrospect most valuable, and the significance of their research experience. We therefore asked the 96 former fellows who had been out of medical school at least 5 years to comment on the student fellowship program. We were most gratified by the response for we received thoughtful statements from 70 of them.

As one might anticipate, the answers varied considerably, but certain aspects of the experience were considered of great importance by practically all respondents; certain motives were common to all. Acceptance of the fellowship was based chiefly on three factors: (a) interest in the subject; (b) the desire to work closely with a teacher and investigator whom the student admired; (c) the chance to participate actively in teaching and research.

There was general agreement that the student fellowship increased the opportunity to develop mature judgment, scholarly interests, and a scientific attitude toward clinical medicine. More than two-thirds of the former fellows now in full-time aca-

demic medicine and research felt that the fellowship had been a decisive factor in their choice of a career. The program appears to have been an important means of developing teachers and investigators.

Close association with distinguished men and the example which they set in teaching, research, and their relations with their colleagues had a profound influence on the fellows. They considered these to be the most valuable experiences derived from the fellowship year. Opportunity for reflection, maturation, and the acquisition of teaching and research experience were also of great importance.

Only five of the 70 respondents had not participated actively in research during their fellowships. Of the 65 who had pursued problems, 54 published the results of their work in a scientific journal. Participation in research not only increased their scholarly interests and skills but gave them a much greater sense of being members of the department. It also heightened their sense of accomplishment.

From the comments we received, it is quite evident that the fellowship was a sufficient reward in itself and that the opportunity to obtain an advanced degree added little if anything to the significance of the experience. Some felt that a degree program might actually endanger the fellowship by making it more formal in nature and by decreasing the scholarly independence of the fellow.

What has been the impact of the student fellowship on the faculty and the students? Objectivity is difficult to retain when one attempts to answer this question. Many intangibles are involved. There is little question that the fellowship program has attracted candidates who come into

medical school with an interest in teaching and investigation already established. The experience as a fellow strengthen and direct but do not create the desire to teach and to seek answers to perplexing problems in medicine in this group of students.

Other students have developed scholarly interests and have subsequently followed academic careers as a result of their fellowship experiences. They have had a chance to test themselves as teachers and as investigators and have realized the pleasures and opportunities which academic medicine may afford—opportunities of which they were totally unaware when they entered medical school.

Student fellows, upon their return to their regular course, have served to leaven the intellectual atmosphere of the school. Because they have had personal experiences with the senior faculty, former fellows foster closer relationships between other students

and faculty members. They have greater knowledge of teachers and teaching and can convey this knowledge to fellow students more effectively than any other group within the school.

Many of the ideas which former student fellows have subsequently pursued and which have resulted in solid contributions to scientific knowledge had their origin in their fellowship year. Although these men might well have eventually carried out their studies had they not accepted fellowships, it seems likely that the opportunity to participate in research early in their professional careers was an important factor in their scientific achievement.

The Rochester student fellowship has been an important experience for the participants. It has resulted from the educational climate of the school and in return has contributed in important ways to that climate.

El Programa de Becas de la Escuela de Medicina de Rochester

La Escuela de Medicina de Rochester University estableció, en 1926, un programa, aun en vigor, de acuerdo con el cual se conceden cada año becas (de \$2,000 por año) a 15 estudiantes, seleccionados, principalmente, por su potencial capacidad en la investigación científica. Un estudiante becado pasa un año dedicado al estudio y la investigación, como miembro menor del Departamento que él ha elegido, participando en todas las actividades departamentales que le interesen (investigación, enseñanza, seminarios, conferencias, etc.). A cada becado se le da amplia oportunidad para colaborar, en un ambiente informal e íntimo, con los miembros de la Facultad. Trabajos avanzados, realizados con vistas a la adquisición de un título académico, no son incompatibles con la beca, pero no son obligatorios; al estudiante se le da toda la libertad posible para que pueda desarrollar independientemente su propio programa de estudios. Aunque resultaría

difícil determinar en qué grado ese sistema de becas ha podido afectar el desarrollo profesional de los becados y contribuir al mejoramiento del nivel general de la Escuela, el profesorado de la Escuela de Medicina de Rochester lo considera como uno de los aspectos más significativos de su programa educativo, opinión que resulta apoyada en cierta medida por una investigación que se llevó a cabo recientemente. Esta trata de una comparación de las carreras médicas y las actividades profesionales de los estudiantes que gozaron de dicha beca, con las de otros graduados de la Escuela que no participaron en ese programa. Los datos estadísticos que resultaron de la investigación son presentados en este artículo por medio de dos tablas comparativas, y son analizados detenidamente por el autor, que es Decano Asistente y Profesor de Medicina de Rochester University.

Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

The Psychiatrist in an Ambulatory Clerkship for Comprehensive Medical Care in a New Curriculum

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THIS PAPER is concerned with the teaching of psychiatry to medical students. The setting is a comprehensive medical ambulatory clerkship, a part of a revised program of medical education at Western Reserve University.* This clinic is beginning its third year of operation.

The discussion of the operation of the ambulatory clerkship, or "group clinic" as it has come to be called, will emphasize those aspects of the program which seem most important in teaching psychiatry.

It should be mentioned at the outset that the idea of teaching psychiatry in a medical clinic setting is not new. The experimental collaboration of psychiatrists and medical practitioners in Minnesota after World War II is described in "Teaching Psychotherapeutic Medicine."⁷ Experimental trends in integrated teaching and the clinic approach are evident throughout the country.^{2, 5} Badal¹ and Harper⁴ have described other aspects of psychiatric teaching at Western Reserve.

THE GROUP CLINIC

The group clinic is designed to offer an experience in general med-

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ical practice with acute illness in adults and adolescents. The clinic is located in a special section of the out-patient department of University Hospitals and draws patients mainly from the admitting clinic.

The full-time director and most of the consultants are internists. The additional full-time staff includes a social worker, public health nurse, and a psychiatrist. There are approximately twelve part-time consultants from internal medicine, preventive medicine, and surgery; another psychiatrist has recently joined the staff on a part-time basis. The additional staff and facilities of a teaching hospital are available.

The clinic operates five full mornings a week. Other conferences are held outside the working hours of the clinic.

The student is given the position of the "doctor" under the supervision of his consultants. He is expected to maintain continuity of relationship with the consultants, to interpret their findings to the patient, and to be the patient's guide wherever he may be referred, whether to another clinic or into the hospital. He is expected to participate in the work with the family and referrals to other agencies. Sufficient time is available to make a comprehensive study of each patient.

Many acute problems are treated in the 2-month period of the student's service. If a patient requires further care, he may be taken into a continuity clinic for long-term care of chronic illness, or transferred to the succeeding group in the same clinic.

There are two types of educational experience which seem most important in the clinic: the direct work of the consultant and student with a patient, and the group atmosphere in which this teaching takes place.

INDIVIDUAL STUDENT-CONSULTANT TEACHING

The demonstration interview.—The author's work in the clinic began when he invited himself in on a physical examination after a student angrily called his patient a "crock," that is, full of mysterious complaints for which he could find no definite cause. Both the patient, an ex-show girl of 59, and the student seemed resentful. The physical was done with unnecessarily vigorous thumping and remarks in front of the patient about "crepitus" and "scoliosis." This consultant intervened to ask the patient if she were puzzled by these words. With this much recognition of her feeling, she began to tell about her "rheumatoid arthritis" which kept her from walking "very far or upstairs," because the pain "got terrible." When asked about her family, she described her father's angina in his chest which kept him from walking "very far or upstairs." The patient's mouth suddenly pulled down in a spasm on the left side, and her voice became distorted as she told that her mother had had a stroke with impaired speech and paralysis of the left leg. After a moment this woman said, "It's funny, but the trouble with my legs started right

after that." The fact that her unmarried daughter and sole support had recently developed similar pains turned out to be a precipitating cause for the patient's coming to see a doctor.

The student and patient showed a remarkable change in attitude. The patient became friendly and as fond of the student as her ambivalence would allow. At the end of this first interview, the patient asked the student if he could be her doctor if she needed to come to the hospital. His reply was gentle. He became an enthusiastic convert to the power of talking. He could be shown a great deal about such things as the genetic and dynamic aspects of hysteria, identification and bodily language, how patients and doctors can express their anger, and how to get and use a good family history. The student admitted his own anger and later told me that it subsided when the patient's complaints began to make some sense.

The internist who had first seen the patient with the student was intrigued by these findings and shared in the subsequent supervision of the case. The case was presented by the student to the general clinic meeting of students and staff. Studies failed to reveal arthritis. A referral to the psychiatric clinic was finally effected for this previously organically fixed woman.

The kind of demonstration interview just described has been extensively used. Techniques to increase participation of the student have been added. If a case is not emergent, a preliminary discussion is held with the student and other consultants to help with leads for further study. The student then tries again on his own. The subsequent demonstration interview is used to pull the

material together. Other consultants often sit in on these interviews.

An initial fear was that the demonstration interview might take the patient away from the student. This has not occurred, and the interview has been a powerful means of getting the student back for more help. It is continually amazing how freely patients in this clinic talk, if their feelings are recognized. It is also often possible to guide the patient to elucidate his problems so the student can see for himself. Of course, a first-hand impression is useful to the consultant.

Predictions about the patient can often be made in the initial discussion with the student before the patient is seen. The subsequent interviews help establish the psychiatric method as scientific, with the possibility of verifying or disproving the predictions by data obtained from the patient. The following example illustrates this.

At the suggestion of the medical consultant, a student came to the psychiatrist about an elderly woman with polydipsia, polyuria, weight loss, a feeling of "faintness" and a "giving way" feeling in her left leg, of 7 months' duration. All physical studies including tests for diabetes mellitus, diabetes insipidus, and a tumor had been negative. The student learned that two friends of the patient had recently died and that the patient was still upset by her husband's impotence of 20 years' duration. In the discussion, before seeing the patient, the psychiatrist asked if this woman was depressed and predicted that, if this were so, one would find evidence of an important loss, identification with the lost object, guilt feelings, and fantasies and fears about her symptoms. The student doubted that any of these

were present. In the demonstration interview with the patient she revealed that her symptoms developed immediately after the death of one friend from diabetes mellitus. The student asked about the friend's symptoms. They corresponded so closely to the patient's complaints that even the symptoms in her left leg could be explained; the friend had had her left leg amputated as a consequence of her diabetes. The second friend had died from an operation of a tumor shortly before the patient had come to the hospital. It was suggested to the student that he point out these identifications. He did and reported that the patient immediately looked as if a load had fallen from her. She told him, "I always take peoples' troubles to myself." She felt guilty that she had not taken better care of her friends.

There are certain dangers in the technique. One must take time to find out what impressions the student gets from such an experience and help the student learn discretion in the use of what we demonstrate. After all, it is not so simple as it may look.

Another patient was seen with a student because he considered her a "maligner," out to keep her relief money. This consultant was impressed in the interview with the patient's severe neurosis and extreme phobic anxiety, in spite of which she was caring for her children and trying to work. The material was abundant; but the student discarded it, saying he felt the patient was just "acting." A discussion of this with the student revealed that he was angry with the patient for trying to stay on relief, angry with the doctor who sent him such a case, and in addition, was unfamiliar with the facial appearance of indifference in hys-

teria. He felt that this woman did not look anxious. When he was reminded of her watering eyes and other evidence of anxiety, and when he had verbalized his anger, he was receptive to a recognition of the material.

THE ATMOSPHERE OF THE GROUP

The brevity of this part of the paper is not a measure of the importance of the topic. A real group feeling has developed in which the psychiatrist is included. Mutual worries and enthusiasms over joint problems mitigate the usual barriers which isolate the specialties. Psychiatry is given new prestige in the eyes of the students through the obvious respect of our colleagues.

Students soon copy the group approach. It is not unusual to see students who are not busy at the moment gather spontaneously to hear a colleague present a case.

Informal conferences during the working hours are frequent and might be illustrated by a case the nurse brought to the author. She had noticed confusion and forgetfulness in a patient being weighed; the student could then be helped to deal with a previously unrecognized psychosis.

A weekly combined student-staff conference affords a further demonstration to the student of the group work needed in comprehensive care and helps him see that psychiatry is not really so isolated from the practice of medicine. These conferences are based on a student presentation of a case or particular problem, with some of the flavor of a good clinical-pathological conference. One such conference was devoted to the effect of the doctor-patient relationship in medical management. All the consultants and students participated in showing how ignorance of this rela-

tionship may ruin a treatment and how knowledge of this is important in solving medical problems. Two examples illustrating this may be mentioned. One man hemorrhaged from a peptic ulcer immediately after transfer from one student to another. A woman on low-salt regime for cardiac disease broke her diet and went into heart failure when her doctor in another clinic transferred her to the group clinic without preparation. The subsequent recognition and handling of her feelings brought the problem to a happier conclusion.

A bi-weekly staff conference is attended by the entire staff (twenty or more) and is devoted to every aspect of clinic operation from particular problem students to such details of medical practice as "what to do with a patient who breaks appointments." Much of the educational work to strengthen relationships with other consultants and increase the variety of cases the psychiatrist is asked to see is carried out here.

A weekly conference of the director, nurse, social worker, and psychiatrists has turned up many problems for further study and discussion by the general staff. Here, for example, a discussion of case problems in women unprepared for pelvic examination resulted in new routines in the use of the gynecology consultant and orientation of the student.

SCOPE AND GOALS OF THE PSYCHIATRIC TEACHING

Psychiatric teaching in the clinic is, of course, primarily centered on the student. Unusual opportunities are afforded, however, for improved patient care, education of the staff, and research in teaching methods of the new curriculum and psychiatry.

Teaching the Student

Broadening the area of consultation.—One of the big tasks of the psychiatrist in such a clinic is to broaden and define the area of consultation. The clinic has a remarkable quota of undiagnosed major psychiatric entities. Patients with depression have been explored for mysterious physical complaints for years, in some cases, before an enterprising student makes the diagnosis. Acute or chronic schizophrenia is not infrequent. As a side-light, the major hysterias, which are supposed to have diminished in number in recent years, are numerous; it seems possible that the psychiatrist seldom sees these patients in the psychiatric clinic, because they have been regarded as organic cases and have been cared for in medical clinics. The psychiatrist works with these patients, of course. However, he could end up seeing only such patients if he acted as the traditional psychiatric consultant who takes only what is sent to him. Psychiatry seemed in danger of becoming routine and isolated from the other consultants if confined to such cases.

Thus, a definite effort has been made to see more "borderline" and even "pure" organic disorders, with which integrated teaching seemed more practical. A definite effort has been made to become involved with such problems as the "crocks," the patients who do not respond to medical treatment or who break their appointments, unexplained pains, the frightened patient who refuses operations, and the dying patient. The psychiatrist helps teach history-taking, physical examination, and interviewing. Help is offered in medical management and formulation of treatment goals by helping the student attain a more thorough knowl-

edge of his patient's emotional life; the patient's feelings about and concept of his disease, his habitual ways of reacting, his motivation and potentiality are shown to be important in this. This broadening process seems to have been successfully accomplished.

Some of the factors apparently responsible should be mentioned. In the first place, the psychiatrist in the group clinic is free to explore new problems, because coverage of the teaching of psychiatric entities is not intended as a clinic function; these entities are already covered in a separate psychiatric clerkship which the student attends two afternoons a week concomitantly with his group clinic experience.

Second, a considerable process of education of the other consultants has been carried out. The author was given the opportunity to formally declare in conference that he would not refuse to see any case, that he was interested in every patient in the clinic within the limits of available time. Types of cases which he had not seen and would like referred were pointed out in detail to students and staff. Everyone possible was involved in each new case. It was announced that the psychiatrist would be sitting in on case discussions of other consultants if he were not otherwise occupied. It seemed clear that the psychiatrist in this kind of work had to make his own place with considerable activity, making sure that others were equally free to sit in on his work. (Of course, success in the practical management of a patient helps; and several cases showed improvement early in the clinic operation).

A third factor is the unique group set-up of our clinic. A cadre of enthusiastic teachers set up the clinic.

The author took part in this process. These teachers were eager to learn and willing to scrutinize and change old ways of practice if new ones could be shown to be better. This cadre of teachers has stayed together for 3 years; this seems to be of major importance in developing such a clinic.

A pertinent personal factor in the author's work was the fact that he came to psychiatry from medicine and had been trained in medicine with many of the consultants in the clinic. Working relationships had a head start.

The student as "doctor."—The act of placing the student in the role of the "doctor" is important. In many medical school clerkships, the student has only limited responsibility and is often cut off from the patient by a hierarchy of resident staff or others with their own special interest in the patient. When the student assumes responsibility his activity is enlisted, and he seeks out his consultants because he needs their help. It should be added that the student's activity may also be decreased in such a situation if he is inadequately supervised and becomes overwhelmed by the situation. The responsibility for the welfare of the patient still ultimately rests on the consultant, who must learn how to protect the student and the patient when necessary without unduly interfering in their relationship.

It is pertinent to quote one student to illustrate the value he found in his role as the "doctor." "I found it very stimulating to map my own plan . . . to diagnose and treat . . . the most serious finding and not spend all my time looking for the 'sleeper' that the other sixteen people working up the patient wouldn't think of . . . Through all the varied

consultations, I was the patient's doctor. In many cases the patient would only follow the consultant's advice when I gave him my permission."

The individualization of teaching.—The approach and content of psychiatric teaching can reach a very desirable flexibility in the individual case-centered approach of the clinic. For example, one student may become very frightened from a discussion of sexual material; in individual work, personality blocks may be more carefully handled. Another student may show considerable insight and a practical grasp of fairly difficult concepts—he can be taught on an entirely different level.

One student who had done excellent work with a difficult and initially belligerent patient and had shown unusual empathy for her situation came for help because of the patient's unexplained relapse to functional complaints. The patient talked of boy friends who were leaving her and of previous doctors in the clinic who had left her. This student was about to leave the service. All students had been instructed carefully in preparing patients in advance for their departure. It now developed that this student had not done this and that the patient's disturbance appeared as she deduced from previous experience that she would soon lose this student. The student was aware that he had done well with the patient and that she was fond of him. When he realized that he had not prepared the patient for his departure, he went back to the patient and discussed this with her. When he returned from this interview, he looked very depressed. He was asked if it was "a tough thing to do to say goodbye;" he said it was. He went on thinking aloud—"Why didn't I tell

her before this?" He then said, "You know, I know she is fond of me but I think these feelings go both ways." This student had recognized a mistake, learned from it, and in the process learned how empathy can be blocked.

Several students have shown marked ability in psychotherapy under close supervision.

A male patient had come to the clinic with the complaints of "gas" and a "swollen feeling" in his stomach "as if a bird in a cage couldn't get out," a fluttering feeling around his heart, and a feeling "as if everything (his abdominal organs) is falling out down below." After gastrointestinal studies had been negative the student consulted the psychiatrist. He mentioned that the man had a wife with heart trouble, and four children. The consultant remarked to the student that "everything falling out" was a complaint he had usually heard from women and suggested an exploration of the patient's feelings about his wife. The patient revealed his first open anxiety when this subject was pursued, and it became clear that his symptoms were patterned after his wife's pregnancies and her heart trouble. He felt guilty about making his wife pregnant twice after the doctor advised her against this and had tried to deny fear that he would lose a wife he obviously loved. His guilt was so strong that he tried to avoid his wife and children, nearly ending his marriage and only increasing his guilt. The consultant's part in the case was to open up the problem initially and to supervise the student subsequently as he worked with the patient himself. The student was able to help the patient realize his concern about his wife, his guilt and how it kept him from being active at home, and his anger

with his wife's doctors. The doctors had never discussed her case with him; they had proposed and canceled heart surgery without explanation. The patient also felt that they should have ligated her tubes after her second pregnancy. Another student "doctor" who took care of the wife was advised to talk to the husband about the heart condition and to help the wife understand that her husband's apparent indifference had been hiding a real interest in her welfare. A few visits brought the patient complete symptomatic relief and a great improvement at home. He became constructively concerned about the welfare of his children and his wife; a marriage that had been at the point of dissolution was strengthened.

Patient Care

It is clear that the quality of patient care is an important part of clinical teaching. The clinic places the welfare of the patient first, as part of the model of the good doctor.

This type of clinic must be compared with a different type of clinic to be appreciated. In many hospitals a system prevails which totally ignores integration or continuity of medical care. The patient may have a different doctor on each visit and only know the clinic secretary by name. Knowledge of a case is fragmentary and often divided among several clinics, which never work with one another. There is no single person in charge of the case, and there is often no time to formulate a real treatment plan. Consultants are hard to reach and may only make contact with each other through brief notes. Families of patients are seldom seen. Puzzling problems are not pursued; if a patient drops from the clinic or is unexpectedly relieved of a symptom, it only means one less

patient to see in a busy schedule.

To one who has worked in such a clinic this new type of care is a radical improvement. Patients who have tried both clinics agree and say that they have had their first opportunity to get to know their doctor and talk to someone; many patients respond dramatically when they come to such a clinic. One student, with the help of a home visit with the social worker, was able to get a man who had never seen any one doctor more than twice to stop "shopping" and come regularly to the clinic. Other traditionally difficult patients may show unexpected improvement. Obese patients may start to reduce, diabetics return to their diet, asthmatics wheeze less. Care in the group clinic is expensive in staff time, yet one must compare against this such factors as the repeated x-rays and medications carried out for years on patients who have not been adequately worked up. What would have happened to the woman with "rheumatoid arthritis" in a different type of clinic?

An illustration of the group approach to a difficult problem is an experience with an old negro woman, destitute and living alone, who was discovered to have an extensive carcinoma in her pelvis. It was felt that hospitalization was indicated to determine if any palliative procedures were possible, or at least to provide terminal care. The approach of telling the patient to come into the hospital had been tried on the first visit. When she refused she had been threatened with dire consequences by an inexperienced surgical consultant, with reluctant assistance by the student. The effect of this approach was to frighten this old lady. She insisted on going home to "look after things." The clinic staff gath-

ered to discuss this problem, and it was agreed that threats only increased her fear, which had probably kept her away in the first place. It was decided to try to establish a relationship with the patient before making further attempts to get her into the hospital.

The clinic social worker and a nurse from the visiting nurse association began regular home visits to this woman. One day the nurse reported that she had discovered that this woman, who apparently had no ties to people, was afraid that if she came into the hospital, her potted flower and a few pieces of ten-cent-store jewelry would be taken away from her. She lived in a confused collection of belongings, which looked a "mess" to the nurse but were strewn about in an order quite apparent to the patient. It was suggested that sanctuary be offered for the most prized possessions if the patient would come into the hospital. She agreed. The social worker brought the flower to the patient's bedside and the jewelry was locked in the hospital safe.

This is humanitarian medicine, made possible by establishing a relationship and respecting the defense and regressive ties of a frightened, lonely woman.

Evaluation of the Student

The direct and informal contact between student and teacher throughout the new curriculum and in the clinic in particular has facilitated a knowledge of the student, his defense, and his good and bad points. The responsibilities placed on the student in this clinic quickly reveal his method of functioning under stress and tell a great deal about his capacity as a clinician. Such factors as the capacity to grow, the ability to empathize, to relate to

colleagues and teachers, intellectual honesty and self-critical faculties, initiative, conceptual and integrative thinking and problem-solving, to mention a few, can be studied in considerable detail. Various types of defensive structures are seen, some healthy, some disabling, some temporary and already softening, some apparently destined to be the life-long "armor" Grete Bibring² speaks of in her paper on this kind of work. One type of defensive student will be described.

Certain students are best described as narcissistic. They give the impression of feeling their opinions and abilities are omnipotent. They resent being treated as students and react to instruction as if personally attacked. They get rid of patients they cannot handle rather than bear the healthy pain of admitting mistakes and seeking help. Such a student hurts his patients and may seem impossible to teach.

Yet some of these students are brilliant; others present an intellectual façade which has to be studied if one is to see the lack of depth. In a curriculum in which written examinations are the main basis for evaluation such students may slip through undetected.

Part of the importance of recognizing such a student lies in the fact that such narcissistic behavior is often temporary and may be alleviated by appropriate teaching technique. Many "narcissistic" students are not permanently fixed in this. Such a student may be reacting to overwhelming stimuli in the only way he knows. Of course a student who can be determined to have a fixed character structure of this sort should be discouraged from clinical work.

One approach is to make the stu-

dent aware that this behavior is a problem. Another approach is to study the teaching situation and try to restructure it—that is, improve the balance between the stress of the experience and the student's equipment at that time.

In the group clinic a direct effort is made to do both. We have to protect the patient and, in so doing, point out to the student his high rate of patient failures, specific problems in management and attitudes, failure to call for or follow consultation, and so on.

Support in the form of technical help and the opportunity of forming a good relationship with understanding instructors, and control by making clear we will not let the student hurt himself or the patient, has helped in several cases. An unexpectedly warmer and more teachable person often appears when the protective shell is not so necessary. Other more disturbed students have recognized the need for help and have obtained treatment with other psychiatrists.

Such studies of specific defenses may profitably be extended to research in teaching and curriculum design.

Education of the Staff

The teachers in this clinic are not bored. An essential factor in this is the forum of informal staff conferences for continual study of methods of treating patients and teaching students. The program described for the students also functions as a successful method for discovering and training teachers.

The clinic affords desirable training in consultative work for any specialist (including the psychiatrist).

CONCLUSION

An attempt has been made to present the experiences of a psychiatric

consultant in an ambulatory group clinic designed to teach medical students as part of a new medical school curriculum. The scope of psychiatric activity in such a clinic is quite different from that of a routine psychiatric consultant. This has been illustrated with case material and some detailed discussion of technique. The group clinic affords a means of teaching psychiatry which utilizes the teacher-student relationship, enlists the student's activity and interest, and makes possible more careful handling of undesirable defenses. Teaching psychiatry from the patient as a whole decreases the opportunity to isolate the emotional and catches the student at the point of his greatest interest.

The group support of the clinic, the improved patient care, the time for investigation, and the opportu-

La enseñanza psiquiátrica dentro de una "Clínica de Grupo"

La enseñanza de Psiquiatría en el ambiente de la llamada "Clínica de Grupo" (*Group Clinic*), que ahora forma parte de un programa revisado de educación médica en *Western Reserve University*, fué iniciada experimentalmente después de la Segunda Guerra Mundial, en la Univ. de Minnesota, por un grupo de médicos de práctica general y psiquiatras (véase Helen Leland Witmer, *Teaching Psychotherapeutic Medicine*, The Commonwealth Fund, N.Y., 1947). La idea básica de ese experimento se encuentra en la tendencia general a la enseñanza *integrada*, que en los últimos años ha tomado gran impetu en los Estados Unidos. La "Clínica de Grupo" de la Escuela de Medicina de *Western Reserve*, que tiene por objeto ofrecer a los estudiantes experiencia en la práctica médica general, constituye una sección especial del Departamento de Pacientes Externos del Hospital Universitario. Su director, y la mayoría de los consejeros, son médicos internistas; el personal regular incluye un psiquiatra, un empleado de la Asistencia Social (*social worker*) y una enfermera de Salud Pública; y prestan allí servicio, además, temporalmente, médicos consejeros de los Departamentos de Medicina Interna, Preventiva y Cirugía. La Clínica está abierta cinco mañanas enteras de la semana. Conferencias entre estudiantes e in-

structores tienen lugar regularmente fuera del horario de la Clínica. Cada estudiante asume con los pacientes y sus familias la posición de "doctor", bajo la supervisión de sus consejeros. El Dr. William R. Adams, Profesor de Psiquiatría de la mencionada Escuela, basándose en sus propias experiencias como consejero de dicha *Group Clinic*, describe en este trabajo algunos aspectos de la enseñanza psiquiátrica ofrecida en ese ambiente a los estudiantes, como parte del nuevo *curriculum* de la Escuela. Las actividades psiquiátricas que se llevan a cabo en tal clínica general ambulatoria son, según advierte el autor, muy diferentes de la rutina ordinaria de un consejero psiquiátrico, lo cual queda ilustrado, en el presente informe, por la descripción de algunos casos tratados y por la discusión detallada de los métodos de enseñanza y técnicas de tratamiento. El Dr. Adams cree que la "Clínica de Grupo" ofrece un medio muy valioso de enseñanza psiquiátrica porque, entre otras cosas, sabe sacar el mayor provecho de la relación entre estudiante y profesor; estimula grandemente la actividad e interés de los estudiantes, facilita la superación de ciertas inhibiciones indeseables, y, más importante aun, una enseñanza de Psiquiatría derivada del tratamiento médico total de un paciente, disminuye la posibilidad de aislar los problemas emotivos y constituye para el estudiante una magnífica experiencia en la práctica de la Medicina comprensiva.

REFERENCES

1. BADAL, DANIEL W. Project Method of Teaching Psychiatry in a Correlated Curriculum. A.P.A. Annual Meeting, May, 1955.
2. BERRY, G. P. Medical Education in Transition. *J. Med. Educ.*, 28: 17-24, 1953.
3. BURING, G. L. Psychiatry and Medical Practice. *New Eng. J. Med.*, 254: 366-372, 1956.
4. HARPER, E. O. Psychiatric Teaching in an Integrated Medical Curriculum. *Am. J. Psychiatry*, 688-690, 1955.
5. READER, G. H. Comprehensive Medical Care. *J. Med. Ed.*, 28: 34-40, 1953.
6. WREN, J. T. An Experiment in Medical Education at Western Reserve University. Association of Life Insurance Medical Directors of America, 1955.
7. WITMER, H. L. (ed.) *Teaching Psychotherapeutic Medicine*. The Commonwealth Fund, New York, 1947.

Personality Inventory Profiles During and After Real Life Stress*

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IN SELECTING STUDENTS for admission, medical schools have established various assessment procedures. The aim of these procedures is to identify in advance those students most likely to succeed in medical school and those who would later make the best physicians. The major research effort in this field has been in the direction of predicting academic success in medical school. Little has been done toward predicting the best physicians, largely because no one seems to be able to define the good physician.

The selection procedures established usually attempt to assess both the intellectual and the nonintellectual aspects of the student's personality.² The relation between intelligence (functioning) and success in medical school has been well explored and is fairly clear. We can predict with high confidence whether or not a given applicant has the intellectual capacity to get through. Unfortunately, we cannot stop with this knowledge alone. Students fail or drop out too often for reasons quite unrelated to basic intelligence but very definitely related to other aspects of personality functioning—the

nonintellectual or emotional factors of personality. The selection process runs into its most perplexing problems at this point.

The Minnesota Multiphasic Personality Inventory has frequently been used to obtain information as to the nonintellectual aspects of personality.³⁻⁵ It has been included in the selection procedure employed at the University of Arkansas School of Medicine. As used here, the MMPI was routinely administered to applicants on the day they appeared for interviews by members of the Admissions Committee. Each applicant took the MMPI prior to being interviewed. The process of test-taking and being interviewed is known to be experienced as stressful and anxiety-provoking by applicants, who are generally well aware that their admission to medical school depends to some extent on the outcome of both test and interview. The question arose then as to whether MMPI profiles obtained under such circumstances of real stress are different from the profiles that would be obtained from the same subjects under other, more normal conditions of less stress and relative calm. If the conditions of the screening procedure are such as to influence the shape of the profiles in any systematic way, we want to know what that influence is, so that it may be taken into ac-

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†The writer is grateful to Miss Peggy Thompson for her assistance in preparing the data.

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count in interpreting the protocols.

The literature provides no direct evidence on this problem. Schofield, of the University of Minnesota Medical School, has done the most extensive work with the MMPI and a medical student population. He has examined the profiles of premedical students and of freshmen and junior medical students, with particular attention to the profile changes occurring after 2 years of medical education. However, he has not investigated the possible changes in profiles obtained from the same subjects under the two different conditions referred to here.

PROCEDURE

The MMPI was administered the first time to all persons applying for admission to the freshman class entering in the fall of 1955. The inventory was given routinely prior to interviews by members of the Admissions Committee. The MMPI was administered a second time to all entering freshman students, i.e., the successful applicants, during their 1st week in medical school. The records of female subjects were omitted from this study. Thus our sample population consists of 79 male students whose ages ranged, at the time of second test administration (T_2), from 19 to 30 years. The median age is 21.5 years, the mean age 23.0 years. The time interval between 1st and 2nd test ranges from 4 to 9 months, with a mean interval of 8 months. The profiles obtained on 1st and 2d administration were submitted to statistical analysis to determine whether they differed significantly.

RESULTS

Application of the Dixon and Mood "sign test" for paired observations as suggested by Edwards¹ for nonparametric statistics, since the distribu-

tion of scores is not entirely symmetrical, disclosed no significant difference on any one of the ten clinical scales. Of the three validity scales, only the K Scale showed a difference significant at the .05 level. This difference remained significant even after correction for continuity was applied. Unexpectedly, the mean and median values of K were higher on 2d administration than on the 1st. Table 1 presents the data for each of the thirteen MMPI scales.

DISCUSSION

One is impressed by the remarkable stability of the MMPI scales. It should be emphasized that we are not here concerned with the question of reliability, for the test-retest conditions were not at all similar. The conditions were different, yet the profiles obtained on the clinical scales were unaffected by this difference. It will be of practical importance in selection procedures like the one described in this study to know that the profiles obtained during the stressful period of selection will be essentially the same as would be obtained in the absence of this particular stress, and that it appears feasible, therefore, to interpret the MMPI profile directly without having to make allowance for the special conditions of stress and anxiety. The personality picture an applicant presents prior to admission is very likely to be the same picture he presents immediately following admission as far as MMPI profiles are concerned.

But what of the upward and significant shift on the K Scale? As Meehl and others would be quick to point out, when as many as thirteen variables are analyzed for significant changes it can be expected that at least one would be found significant on the basis of chance alone. This is one possible explanation, and it might

TABLE 1
MAPI Mean and Median K-Corrected T-Score Values
During Assessment (T_1) and Following Admission (T_2) of
79 Male Applicants to Medical School

Significant at .05 level with correction for continuity.

100

be the correct one. An alternative explanation is that the observed change is psychologically meaningful. Schofield⁴ studied the group and individual changes that occurred after 2 years of medical education and also found reliable changes in the same direction in the mean score of K, along with changes on the other two validity scales (L and F) and two of the clinical scales (Pd and Mf). He suggests that the higher K indicates an increasing reserve concerning more intimate aspects of the students' personal lives. It is interesting to note that the mean K values for our sample were higher on both test and re-test than those reported for Schofield's Minnesota sample, T scores of (approximately) 63 and 66, as compared with Schofield's 59.8 and 63.9. Again, it has been suggested that K reflects "defensiveness against psychological weakness." If so, then these students are almost paradoxically more defensive immediately upon entering medical school than they were while seeking admission. On second thought, this might not be so strange after all!

SUMMARY

The MMPI is a useful psychological instrument in evaluating the non-intellectual characteristics of applicants for admission to medical school. To determine whether the stress attendant on the selection procedure has any distorting effect on personality profiles obtained under such conditions, the MMPI was administered a second time to a group of successful applicants immediately following their admission. No significant changes were noted on the ten clinical scales, and only one of the three validity scales disclosed a significant shift. This was on the K Scale and in the upward direction, suggesting

that the students became more "defensive" after they were admitted.

These findings suggest that MMPI profiles obtained under assessment conditions similar to these may be interpreted directly without making allowance for special stress and anxiety.

REFERENCES

1. EDWARDS, A. L. *Statistical Methods for the Behavioral Sciences*. New York: Rhinehart and Co., 1954.
2. GOTTHEIL, E., and MICHAEL, C. M. Predictor Variables Employed in Research on the Selection of Medical Students. *J. M. Educ.*, 32: 131-47, 1957.
3. SCHOFIELD, W. A Study of Medical Students with the MMPI: I. Scale Norms and Profile Patterns. *J. Psychol.*, 36:59-65, 1953.
4. J. A Study of Medical Students with the MMPI: II. Group and Individual Changes after Two Years. *J. Psychol.*, *Ibid.*, pp. 137-41.
5. J. A Study of Medical Students with the MMPI: III. Personality and Academic Success. *J. Appl. Psychol.*, 37:47-52, 1953.

Una Investigación sobre el MMPI Test

El test llamado *MMPI* ("Minnesota Multiphasic Personality Inventory") es usado frecuentemente para obtener datos sobre las características no intelectuales de un candidato a admisión a la Escuela de Medicina. En la correspondiente a la Univ. de Arkansas, se suele administrar ese test el mismo día, y poco

antes, de la entrevista personal con miembros del Comité de Admisión a que se somete a los candidatos, y debido a esa circunstancia se considera que el *MMPI* es especialmente apto para crear un estado de presión y angustia en un estudiante que sabe que su admisión depende en gran parte de los resultados de ambas pruebas sucesivas. Por tanto surgió la pregunta de si el "perfil" de la personalidad de un candidato, obtenido por el *MMPI test*, queda o no afectado de modo significativo por el estado de ansiedad en que podría haberse hallado el candidato. Para resolver esa cuestión y determinar el grado de influencia que las circunstancias particulares en que se toma el test pudiesen tener en los resultados, se hizo en la mencionada Escuela el experimento siguiente: En 1955, después de ser administrado el *MMPI* a todos los estudiantes que habían pedido admisión a la Escuela en las condiciones usuales (es decir, poco antes de las entrevistas personales), se sometió al mismo test a los candidatos ya admitidos, durante la primera semana de clases, es decir, transcurrido ya un intervalo de unos 8 meses entre el primer *MMPI* y el segundo. Los "perfíles" obtenidos con ambos tests fueron sometidos a un análisis estadístico para determinar las discrepancias entre uno y otro. Esta investigación, cuyos procedimientos y resultados se discuten detalladamente en el presente informe, no mostró ninguna divergencia significativa, pese a las condiciones diferentes en que fueron administrados ambos tests. De ello se infiere que las particulares circunstancias en que se suele administrar el *MMPI*, a pesar del estado de angustia que éstas pudiesen crear, no ejerce influencia significativa sobre los resultados.

* * *

Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

A Revised Program of Medical Education at Johns Hopkins

IN SPITE of the manifest excellence of the American system of medical education, in the evolution of which the Johns Hopkins University has played a significant role, there have emerged in recent years a number of serious defects. The most important of these are: (1) the excessive number of years required to train a physician, (2) the dichotomy which exists between the liberal arts and the medical sciences, and (3) the noticeable decline of strength which has recently developed in the basic science departments of medical schools.

The combined undergraduate and medical curriculum has grown undesirably long

As knowledge in medical science has increased, the combined undergraduate and postgraduate courses in medical schools and hospitals have become longer and longer. At the same time no steps have been taken to allow prospective doctors to gain an earlier start in their medical studies. In general, physicians and surgeons in this country are considered well qualified to practice only after they have completed four years of college, four years in medical school, and an additional three or more years in a hospital—a total of

at least eleven years after high school. When two years of compulsory military training are added, many doctors of medicine have reached the age of thirty before they have finished their formal education. Those interested in research have spent a number of their most promising years merely preparing for their careers.

This demanding period of training, with its inevitable economic strain, has become so long that it is now discouraging candidates from entering the field of medicine. In addition, it is forcing some medical graduates to enter private practice before they have gained adequate experience as hospital residents.

An "iron curtain" has developed between liberal arts and medical science

A second serious deficiency relates to the sharp separation which has traditionally existed in American education between the liberal arts and medical science. The curriculum for medical students has always been virtually cut in two by an "iron curtain" which drops precipitously at the end of college. Once he enters medical school, the prospective physician is expected to leave his interests in the humanities and social sciences behind in order to devote himself exclusively to the study of medicine. Divorced so abruptly and so completely from the pursuit of a general

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education, he all too frequently loses interest in everything except the technical requirements of his chosen profession. With such a system in vogue, it is not surprising that many American physicians, though technically competent, appear deficient in their social, historical, and humanistic understanding, even in matters closely related to health.

Faculty strength in the basic medical sciences has tended to decline

American medical schools, particularly during the past two decades, have become top-heavy. For a variety of reasons, they have tended to invest an increasingly large proportion of their total resources in clinical faculties and laboratories. This trend has led to a noticeable decline in the strength of the basic science departments of nearly every medical school in the country. Because of the proportionately less attractive opportunities offered, and because of the comparably long period of training required, candidates have become alarmingly scarce. If a greater proportion of medical scholars is not attracted in the future to the basic science departments of medical schools, the foundations of American medicine will be seriously threatened.

Nor can these basic science departments continue to flourish unless their roots become more deeply imbedded in the natural science departments of their parent universities. For as Sir Francis Fraser, Director of the British Post-graduate Medical Federation, recently stated, ". . . While clinical medicine continues to depend to an increasing extent on physiology and biochemistry, it is looking now for its inspiration and its methods especially to the work of the physicist, the chemist, and the biologist. Without an understanding

of these sciences and their recent advances it is difficult to assess the value of much of the new work being carried out in clinical science and being applied to the practice of medicine. In other words, these subjects can no longer be regarded as *pre-medical* in our scheme of medical education, but rather as *preclinical*, along with anatomy, physiology, biochemistry, pathology, bacteriology, and pharmacology."

An adequate understanding of modern health problems also requires a penetrating knowledge of subjects not formerly considered "basic medical sciences." Sociology, psychology, and anthropology, for example, may make significant contributions to such understanding. It is desirable for the optimal development of medicine to establish these behavioral sciences as basic to the study of medicine. This objective can probably best be attained by the development of strong university departments in close association with medical faculties rather than through the creation of new departments in schools of medicine.

The Hopkins Revised Program is aimed at counteracting these shortcomings

The Revised Program of the Johns Hopkins University is aimed at counteracting, as far as is possible, all three of these basic shortcomings of present-day medical education. It is designed to introduce a greater flexibility into the study of medicine by permitting selected students to find in medical school places for which they are qualified more by their motivation and maturity than by the number of credits they have accumulated in premedical courses. It permits selected candidates, for example, to enter medical school as full-fledged graduate students after only two

years of college. At the same time it offers opportunities for other students to enter after either three or the usual four years of college. It provides a more liberal curriculum by establishing an interdigititation of courses in the humanities and the medical sciences. It involves an appreciable lengthening of the traditional academic year and provides a more efficient transition from medical school to hospital. It enables all students to finish at an earlier age the predominantly passive acquisition of factual information which is required in all elementary curricula, and permits them to move on more promptly to the active and far more rewarding occupation of independent study.

American medical students have for generations taken the required premedical courses in biology, physics, and chemistry during their four years in college. The quality and content of these courses vary widely in different institutions. As a result, students enter medical school dissimilarly prepared, and much time in the first year must be devoted to the reteaching of subjects which should already have been mastered. In addition, candidates for medical school often take far too many science courses, to the neglect of the social and humanistic studies.

Many attempts have been made in the past to remedy these shortcomings through proper liaison between colleges and medical schools. But, as might be expected from the number of institutional and personal variables involved, most efforts in this direction have been singularly unsuccessful.

The program offers several transitions from college to medical school

The Revised Program will allow a limited number of students to enter the Johns Hopkins School of Medicine

after the sophomore year of college. Admission requirements in the natural sciences for such students will include only elementary instruction in college biology and chemistry; as college undergraduates they will be encouraged to devote the major portion of their time to the humanities, mathematics, and the social sciences. Medical students entering under the early admission plan will be in residence in the School of Medicine but will be required during their first year to take three courses under the Faculty of Philosophy on the Homewood campus—one in elementary physics and two in humanistic and social subjects of their own choice. Intensive instruction will be provided at the Medical School in advanced chemistry, mathematics, and genetics. The latter courses will be designed primarily for the special needs of students of medical science. In both the second and third years these students will be required to elect at least one liberal arts or social science course. They may also continue advanced studies on the college campus during the unscheduled time in the later years of their medical course. At the end of the third year, they will be eligible for A.B. degrees given by the Faculty of Philosophy.

Candidates will also be admitted to the first-year class at the completion of their junior year in college. In exceptional cases, such students may be admitted to the second-year class if their preparation is judged to be equivalent to that required for completing the first year's work. Students admitted after four years of college will enter the second year of the Revised Program.

It is to be emphasized that students who have elected to remain four years in college, or who have

even taken graduate work in university departments other than medicine, will continue to be admitted to the Johns Hopkins Medical School. Although the new admissions policy will permit qualified students to enter medical school after either two or three years of college, such admissions will not be allowed to reach the point where they exclude the acceptance of students who have completed the full college course.

In summary, the program will allow students selected for early admission to continue their college education after they have begun the study of medicine and will thus encourage them to retain a continuing interest in the liberal arts. It will provide them a uniformly higher standard of premedical preparation in the natural sciences. It will enable students admitted after only two years of college to complete requirements for the M.D. degree a year earlier than otherwise, and by saving the expense of a full year of undergraduate education it will permit a greater proportion of them to take adequate residency training.

It will also provide a more expeditious preliminary course for those wishing to follow careers in the basic sciences of medicine and public health.

The final year of medical school: a comprehensive 12-month internship

With recent advances in medical education, duplications and inefficiencies have developed in the transition from medical school to hospital. As hospital clerkships have become more common and more thorough, senior medical students have found that their interests on hospital wards are often in direct conflict with those of the junior house staff, particularly the interns. Indeed, the senior year in many medical

schools has become equivalent to a very effective rotating internship. Also, through "organized medicine," an increasing amount of pressure has been exerted upon all medical-school graduates to elect rotating internships. This trend threatens to lead to even further duplication of effort. Finally, there are still a good many American medical graduates who for economic reasons take only a single year of hospital training. If they could complete their internships earlier, many of them might be able to afford adequate residency training.

For all of these reasons, the Revised Program has been so designed as to transform the final year of medical school into a comprehensive twelve months' internship. During this fifth or "intern" year, each student will rotate through the major clinical services of the Johns Hopkins Hospital, and under the close supervision of the residency staff will carry out the duties now performed by interns. He will carry the usual twenty-four-hour responsibility for patients. In addition, he will be given a two-month elective period during which he may take either special work in basic science or additional clinical training in any one of the various departments of the Hospital. He will continue to pay tuition but will receive board and lodging (or their equivalent) from the Medical School and Hospital in return for services to patients.

This feature of the Revised Program will benefit all students by cutting a full year off the period required for completion of medical school plus internship. (For those entering under the early admission plan, two years may be saved.) More important, it will eliminate many defects in the present system of clinical training: it will avoid the conflict of senior stu-

dents with junior house officers, it will assure participation in a university-sponsored internship, and it will bring all candidates more promptly and more surely into the significant experience of a hospital residency.

A summary of the new curriculum and a comparison with the present one

The schedules for the first four years of the medical curriculum will be based on an academic year of forty weeks (e.g., September 10-June 28). The fifth-year course, which represents a rotating internship in the hospital, will cover the entire calendar year of fifty-two weeks (July 1-June 30).

The following is a summary of the schedule tentatively planned for the new curriculum:

YEAR I: Biochemistry I, including organic, quantitative and physical chemistry; physics (Homewood); mathematics and biostatistics, including rudiments of calculus; genetics; elective courses (two), in subjects other than natural sciences (Homewood). *Unscheduled time:* approximately 750 hours. *Total hours:* 1680.

YEAR II: Anatomy; embryology; cultural anthropology; social psychology; biochemistry II, including biophysics; physiology; history and philosophy of science; medical psychology; elective course, in a subject other than natural science (Homewood). *Unscheduled time:* approximately 575 hours. *Total hours:* 1680.

YEAR III: Microbiology; pathology; pharmacology; interviewing of patients; clinical diagnosis; laboratory methods of diagnosis; radiology; elective course, in a subject other than natural science (Homewood). *Unscheduled time:* approximately 475 hours. *Total hours:* 1680.

YEAR IV: Medicine, including neurology and dermatology; surgery, including surgical specialties; psy-

chiatria; preventive medicine and public health; pediatrics; obstetrics-gynecology; radiology; ophthalmology; amphitheatre clinics. *Unscheduled time:* approximately 350 hours. *Total hours:* 1680.

YEAR V: Medicine, including neurology and psychiatry; surgery, including surgical specialties; pediatrics; obstetrics-gynecology; elective period (two months). *Total time:* 12 months, minus two weeks' vacation.

In spite of the new program's accelerated schedule, the number of hours devoted to the individual pre-medical, preclinical, and clinical subjects is not significantly decreased from that now provided by the present curriculum; in fact, in many cases it is substantially increased. This apparent paradox results from the fact that the academic year has been increased from thirty-two to forty weeks in the first four years and from thirty-two to fifty-two weeks in the fifth year. At first glance such a schedule may seem unduly rigorous. It should be noted, however, that more than two months of vacation are provided each summer except during the final "internship" year, and an abundance of elective time is included throughout the curriculum.

Some likely criticism of the program, and a discussion of them

In the presentation of this plan, it has been pointed out that all students will gain one year of time, and those who enter under the early admission plan at the end of their second year of college will gain two years. The plan is also designed to enrich and deepen the educational experience. In the consideration of these apparently paradoxical purposes, it should be emphasized that the curriculum in medical school is essentially "full time" and provides a far more rigorous schedule of study

than that of most colleges. Furthermore, with the prolonged academic year of forty weeks, the number of hours available for study is one and a quarter times as great as in a conventional college year.

Indeed, not only will the students, by continuing studies in the humanities during medical school, have taken at least as many liberal arts courses as the average college pre-medical student, but they will also have completed considerably more than the usual four years of college by the time they are given their A.B. degrees at the end of the third year in medical school. Most important of all, they will have been transferred from large college classes, working at the comparatively leisurely tempo of a college curriculum, to small classes of highly selected and strongly motivated colleagues living and studying in a graduate school.

Doubt is sure to be expressed as to whether students can be properly selected for admission to medical school after only two years of college. Certainly the admission committee's task will be more difficult because of the shorter college record available at the time of decision. Statistics indicate, however, that selections based upon high school plus freshman college records are nearly as valid as those based upon records of three full years in college. Furthermore, only outstanding students, whose motivation is such as to make them seek entrance to graduate school one or two years earlier than usual, will be considered for admission to the new first-year class. Whenever there is doubt, the student will be advised to remain in college for one or two years longer before attempting to go to medical school.

Objections also may be raised to transferring the responsibility of

teaching organic, physical, and analytic chemistry from the college faculty to the department of biochemistry in the Medical School. It may be argued that only applied chemistry will be taught in medically oriented courses. To assume, however, that a properly selected chemistry staff of the medical faculty, working in collaboration with the chemists of the Faculty of Philosophy, would neglect to teach the broad principles of basic chemistry seems hardly warranted. On the contrary, such teachers might be expected to present more effective courses for medical students by virtue of their ability to teach basic principles through illustrative examples having a direct bearing on medical science.

Lastly, criticism of the proposed student internship may be voiced on the grounds that the students will not be sufficiently exposed to practitioners of medicine during their first year of full-time hospital training. Such an argument, however, cannot be defended for two reasons: first, the staff which will supervise the student internship will be the same as that now in charge of the hospital interns; and, second, under the new plan this staff will devote more time to the interns than it does at present, primarily because it will not be involved in simultaneous teaching of hospital interns and medical students. Practical problems relating to accreditation and interrelationships with residency programs in other hospitals are bound to arise, particularly at the outset, but none of these appears insurmountable.

Training in the basic sciences of medicine must be strengthened

The recent decline in the strength of preclinical faculties of American medical schools has already been referred to as a matter of serious im-

port. Unless the present trend can be reversed, teaching and research in the basic disciplines of medical science are certain to suffer, to the eventual detriment of all of medicine.

The early admission feature of the Revised Program has a direct bearing on this crucial problem. By allowing qualified students to enter medical school two years earlier than in the conventional system, the new program will permit candidates for doctorates in medical science to begin their specialized training at least one year sooner than at present. Some will begin after having completed the full medical school course. Having experienced a year's internship, they will have had an opportunity to gain a comprehensive grasp of medicine as a whole and an understanding of the place of their chosen sciences therein. For others, who have entered upon the medical course but who wish to begin their specialized training without completing the M.D. requirements, there will be a suitable point for them to do so at the end of the second or the middle of the third year of the revised curriculum (i.e., four or four and a half years after entrance to college). Thereafter they will devote two or three years to advanced courses, research, and the preparation of their doctoral dissertations. As graduate students they may take their doctorates in any one of the preclinical departments of the Medical School (anatomy, physiology, biochemistry, microbiology, pharmacology) or in any of the following departments of the School of Hygiene and Public Health: biochemistry, epidemiology, pathobiology, biostatistics, or sanitary engineering. Occasionally, candidates after completing their introductory medical course will return to the college campus to

take doctorates in such departments of the Philosophical Faculty as chemistry, physics, biology, and biophysics.

Students who exhibit in medical school a sustained interest in basic science will be encouraged to become candidates for doctoral degrees in the preclinical sciences. They will be eligible for special predoctoral fellowships designed to assist them in completing their advanced training. By making the combined resources of the Faculties of Medicine, Hygiene, and Philosophy more available to graduate students in the basic medical sciences, and by shortening the time required for formal education in these fields, the Revised Program should enable the Johns Hopkins University to train an increasing number of qualified teachers and investigators in the basic sciences of medicine.

It is recognized that these changes in curriculum will not alone attract sufficient students into the preclinical sciences. A greater proportion of the total resources of every medical school will have to be invested in basic science, if a proper balance between the preclinical and clinical disciplines is to be achieved. Perhaps the strongest argument in favor of the Revised Program, however, is that it will inevitably result in a strengthening of the basic science departments of the Johns Hopkins Medical Institutions.

Independent study and discovery: a cardinal principle of education

One of the cardinal principles of higher education is the encouragement of the thorough mastery of knowledge through participation in the process of discovery. It inevitably leads to emphasis upon scholarly teachers, upon free time, upon depth of study, and upon the cultivation

of individual initiative. With this emphasis goes mistrust of superficial "orientation" courses, of minutely prescribed schedules, and of passive learning.

There is, for example, an acknowledged need in medical education for a better understanding of social and environmental factors in illness; of the social resources and processes concerned in convalescence and rehabilitation; of the humanistic values which are significant in our culture, but which sometimes appear trivial and obstructive to the technologically-absorbed physician. It seems unlikely that these deficiencies can be remedied by such devices as lectures in human ecology or exercises in social service. Rather the encouragement of deep and earnest study of these matters by interested medical students under inspiring scholars seems better calculated to produce enduring results.

This basic principle of advanced learning is violated all too often in American graduate schools, particularly in schools of medicine. Too much time is devoted to the passive absorption of factual information and too little to the active acquisition of knowledge. Active learning in medical school can be encouraged only through laboratory, clinical, and library research, guided by faculty advisers, but pursued because of the student's own initiative. For such independent study, generous blocks of free time must be provided in the curriculum. To be of maximum value, a good part of this free time must be scheduled in the fourth and fifth years, after enough of the background and methodology of medicine has been mastered to make elective endeavor truly profitable.

The Revised Program is designed specifically to promote sound habits

of self-education at the earliest possible stage in the career of each medical student.

New facilities; a tentative timetable; and a summary of the objectives

The dormitory now under construction will greatly improve the living conditions for medical students. The new, adjacently located apartment buildings for married students will tend to draw this important segment of the student body more intimately into the medical-school community. The social and recreational facilities provided by the new quarters should add significantly to both the attractiveness and the effectiveness of the educational program.

Essential to the Revised Program is a new basic science building. Planning for this building is already under way. Since its construction will not be completed for at least two years, the full program cannot be put into effect until the fall of 1959. In the meantime, the basic science departments will be further strengthened by new appointments, and the details of the teaching schedule will be finally formulated by the faculty.

It is anticipated that the Revised Program will achieve the following objectives:

1. It will help to attract a greater number of talented students to the study of medicine
 - a) by shortening the course of training for selected candidates by two years;
 - b) by cutting accordingly the total cost of their medical education; and
 - c) by increasing the emphasis upon creative and independent study.
2. It will tend to break the presently existing barrier between the liberal arts and the medical

sciences, and thus not only liberalize the training of medical students but also bring the School of Medicine into closer collaboration with the rest of the University.

3. It will raise the academic standards of the premedical courses in the natural sciences, and avoid the unnecessary duplications of effort which now prolong the combined college-medical school curriculum.
4. It will provide, through generous allotments of free time, unusually favorable opportunities for students to engage in research during their formative years in medical school.
5. It will improve instruction in the social sciences as they bear upon the humanistic and sociological problems of medicine.
6. It will automatically provide an effective internship in the Johns Hopkins Hospital for every se-

nior student in the Johns Hopkins Medical School.

7. By effectuating an earlier completion of the required course in medical school, it will allow a greater proportion of graduates to obtain optimal post-graduate training in hospital residencies.
8. It will encourage more students to pursue careers in the basic medical sciences, and will thus enable the University to contribute new strength to the foundations of medicine.

Finally it should be stressed that, under the Revised Program, students who have completed the full four-year collegiate course will still be eligible for admission to the School of Medicine. Only a carefully selected group of students who are qualified to enter after two or three years of college will be granted admission to the first-year course of the new curriculum.

Una revisión del Programa de Educación Médica

El 19 de abril de 1957, el Comité de Consejeros de la *Johns Hopkins University* aprobó definitivamente un nuevo Programa que abrevia el período de educación formal requerido en esa Universidad para la carrera médica. El presente trabajo, tomado del *Johns Hopkins Magazine*, junio 1957, es un detallado informe sobre las causas que motivaron dicha revisión (un *curriculum* médico excesivamente largo y sobrecargado, la "cortina de hierro" que se había levantado entre las Artes Liberales y la Ciencia Médica, la escasez de profesorado para la enseñanza de las Ciencias Médicas básicas, etc.); así como de los objetivos que se espera alcanzar mediante esa reforma (continuación de los estudios de Humanidades y Ciencias Sociales simultáneamente con los de Medicina; estimular a un mayor número de estudiantes a que sigan carreras en las Ciencias

básicas, aliviando así la escasez de profesores e investigadores en ese campo, etc.) y de las innovaciones introducidas para esos fines. Mediante un resumen del nuevo *curriculum* comparado con el antiguo, se destacan las diferencias fundamentales y se discuten las ventajas del nuevo Programa, así como las objeciones y críticas que se supone podrían suscitar dichas reformas. Para iniciar el nuevo Programa fué necesario conseguir un fondo de 10 millones de dólares indispensable para pagar los salarios del nuevo personal de enseñanza y para la construcción de un edificio moderno de Ciencias Básicas. La Universidad cuenta ya con esta suma y espera conseguir también los fondos adicionales necesarios para llevar a cabo con éxito sus propósitos.

* * *

Separatas del artículo completo, en español, podrán obtenerse si son solicitadas por un minimum de 25 lectores.

Editorials

Medical Education in the New China

IN AUGUST, 1957, a group of nine physicians from the United Kingdom visited Communist China. Fortunately, at least one of that group, Dr. T. F. Fox, Editor of "The Lancet," has now recorded his observations, *Lancet*, November 9, 16 and 23, 1957, including notes on medical education which should be of interest to the Western World.

As in many other countries with predominantly agrarian populations, medical care in China has rested largely in the hands of about 360,000 indigenous medical practitioners. With only 70,000 physicians trained in Western medicine for 80 million people (1 to 9,000) an all-out effort to train more "Western"-type physicians was an obvious first step for the People's Republic.

Accordingly, the preparation of physicians in China was stepped up from an educational venture to something approaching a production line. (Perhaps this is simply falling in line with the general trend toward industrialization in Cathay.) The program has been reduced from at least 6 years to 5 years, and the annual student intake is now 8,500. It has been as high as 17,000. Foreign languages and political instruction are included in the program. Instances are cited where student bodies have increased as much as five-fold. Fox observes, as did Kilborn, *J. Med. Educ.*, 29; 21-27, 1954, that the accelerated program, combined with a sharp increase in the size of student body has resulted in a down-grading of medical education.

In passing, it should be noted that the problem of vast student bodies is not unique to China. Medical schools in a number of Latin American countries, especially the Argentine, in the Philippines and other lands have assumed similar burdens for financial gain or under government pressure.

Pre-medical education in China includes 6 years of primary and 6 years of secondary education, capped by a state examination on elementary science, Chinese literature, and political science.

In Peking, 44 percent of the students are women.

About 50 percent of the curriculum hours at Peking are devoted to lecture. Basic science courses occupy the first half of the program. During the clinical years, some degree of specialization is permitted. Pediatric and public health candidates may branch off. The fifth year is often referred to as the intern year.

Examinations are frequently oral, and failures are few (in sharp contrast to many other Asiatic schools). One odious responsibility of a Chinese medical school dean is that he must assign his graduates to the various posts which the government requires to be filled.

After graduation—all physicians are specialists working in groups. Some graduates go on for 3 or 4 years of advanced training in order to

serve as hospital consultants. Four years are required for internists or surgeons; three years for pediatricians or ophthalmologists.

The Rockefeller Foundation should take pride in Fox's comment that the Peking Union, founded by the Rockefeller Foundation in 1919, retains its position of educational and research pre-eminence. It shares with the postgraduate college at Hankow the responsibility for teaching the teachers. The fact that there are 38 research fellows working at Peking suggests that academic careers are still attractive.

Medical research is not limited to medical colleges. Indeed, with the teaching burden of the faculty members, one wonders how they could have any significant amount of time for research. Apparently the bulk of investigative work is carried on in research institutes controlled by the central or provincial governments. Equipment is good (some from the U.S.A.) but the atmosphere is obviously stifled by the blunt statement of the president of the Chinese Academy of Sciences "we do not stand for research for research's sake . . ." Perhaps the major research program centers on the Academy of Medical Sciences in Peking. The planning of medical research, however, rests with a committee of the Ministry of Health.

In a country undergoing the rapid changes now in motion in China, a great deal of operational research must be needed. However, there is apparently too little academic research to permit any scientific advance.

At a time when we are alert to developments in the Communist world, it is evident that the educational mission reported in these articles had considerable value—for both sides. Would not the opportunity for a somewhat similar delegation of U. S. medical educators to observe the Chinese scene be of comparable merit? J. Z. B.

China Medical Board

IN 1928, the China Medical Board was incorporated under a charter to "extend financial aid to the Peking Union Medical College and/or like Institutions in the Far East or the United States." However, in 1950 when the College was seized by the Communist Government in China, the program was extended to provide aid to nursing and medical schools in other Far Eastern areas and in selected programs in the United States. The funds have been made available for instruction, renovation of buildings, equipment of laboratories and for fellowships and Visiting Professorships.

Korea, Japan, Formosa, the Philippines, Indonesia, Malaya, Burma, Thailand, Viet-Nam and Hong Kong have all benefited from the program of the China Medical Board.

As a recent report indicates, the Board continues to demonstrate imaginative support for medical education and medical research in a world area of great importance. A grant of almost a half million dollars to Yonsei University Medical School in Seoul, Korea will assist in the erection and equipment of a basic medical sciences building.

Medical libraries in Japan and Singapore received substantial grants for the furnishing and equipping of medical libraries. In Korea and

Japan, funds were made available to permit the purchase of teaching equipment.

Thirty-seven individual grants for fellowships were made to medical and nursing schools throughout South-east Asia. Travel to the Orient by medical educators from the United States has been financed.

The Association of American Medical Colleges has been the fortunate recipient of a very substantial grant from the China Medical Board which shared the cost of the construction of our new Headquarters Building in Evanston, Illinois.

The receipt of the Annual Report of the China Medical Board affords an opportunity for this *Journal* to congratulate the Board on its outstanding program in support of medical education and research, and to express appreciation for its important role in the development of the Association of American Medical Colleges. J.Z.B.

Correspondence

To the Editor—I wonder if the summaries that follow the articles in *The Journal of Medical Education* are written in the right language to have proper universal appeal. Is not Interlingua a tool that all those that do not have a romance education will have to learn for just one purpose? And might not this learning be more difficult for those speaking Germanic or Slavic languages than those speaking romance languages? I rather suspect that the average Japanese or Chinese medical doctors and scientists know some Latin and would find the learning of Interlingua less practical than learning a foreign language already in use. They would then be able to read the article in the original and perhaps many other things as well.

I would like to suggest a return to Latin for international medium of scientific medicine. Many medical terms are Latinized. Most of us here and in Europe have studied some Latin. Many of the abbreviations we use are abbreviations of Latin. Thus, many of us would have a start in Latin.

This thought came to me when I was recently reading *De Motu Cordis*. On each page the original Latin was opposite its translation. It seemed to me that the Latin was as easy to comprehend as most of the Interlingua summaries I see. With a little brushing up, Latin should be easier.

There is a present-day example of the use of Latin in scholarly writing. All botanical terms are Latinized. A Dutch botanist told me she had comparatively little trouble when she first came to this country on account of the amount of Latin that was used in botanical writing.

It is interesting to speculate why Latin is used so little in present-day scientific writing. It was a precise language and in universal use for hundreds of years. The credit for the change over to vernacular is given to the rise of European nationalism which began about 150 years ago and was perhaps first used by the German mathematicians writing in their own language.

I have asked a few of my medical

associates and have not found one who could read Interlingua. All but one (and this no Roper poll, as I asked no South Americans but neither did I ask any Russians) thought it would be easier to brush up on Latin than to learn Interlingua. One of them told me of an incident: In World War II, it was possible to talk to a German in Latin after attempts at German and English had failed. This reminded me of my own experience in 1919 when I used to talk to a Jesuit, I in the worst possible French and he using Latin. After several weeks, I found that the Latin I had not studied for 5 years was sufficient for reasonable communication.

The present policy of the editors of American medical journals to have their articles followed by summaries in Interlingua is questionable. Those readers abroad, particularly in Europe, who do not read English are unlikely to know as artificial a language as Interlingua. Many of them, on the other hand, have had sufficient Latin to be able to make sense of a summary in simple Latin. It may be asked, therefore, whether it would not be more to the point to substitute Latin summaries for the present summaries in Interlingua.

Qui edunt commentarios Americanos de medicina adicere solent singulis articulis brevioria scripta lingua facta quae Interlingua vocatur. Id utrum premium operae sit dubitare licet. Nam lectores transmarini, maxime Europaei, si Anglice nesciunt, illam factam Interlinguam aequo nescient. Eadem autem maxima pars Latine satis sciunt ut brevioria hac lingua scripta intellegere possent. Quarerendum est igitur num magis prodesset brevioria Latine uti quam illis Interlinguis scriptis.

David Metheny, M.D.
Seattle, Wash.

To the Editor—I want to thank you for publishing the item on the Draft of Doctors appearing on page 875 of your December issue. It might be of interest to your readers to know that 70% of the interns who participated in the Berry Plan this year have applied for a commission. The military departments estimate the number of applicants is adequate to meet their need for medical officers for fiscal year 1959 (1 July 1958—30 June 1959).

We do have a limited number of vacancies for deferment for residency or postgraduate training in Otolaryngology, Pathology, General Practice, Preventive Medicine and Public Health, Occupational Medicine, and Physical Medicine and Rehabilitation. We will continue to consider applications for deferment in these specialties. Interns who desire deferment for training in these specialties should write to this office.

I would like to take this opportunity to thank you and the Deans of all the medical schools for your cooperation in this program.

Frank B. Berry, M.D.
Department of Defense
Washington, D. C.

To the Editor—It is good to see the kind of statement Charles S. Brant and Bernard Kutner have made in their article, "Physician-Patient Relations in a Teaching Hospital," which appeared in the October 1957, issue. Their systematic approach to viewing how well there is being developed in medical students "an understanding of, and a concern with the social, cultural, and psychological factors inherent in the processes of giving and receiving medical care" is indeed pioneering.

The specific focus of their study was on how well a patient-centered, comprehensive care teaching program achieves the goal of encouraging the "minimization of patient stress and anxiety during the course of treatment." Finding that this goal is "not always adequately achieved" the authors conclude that "what needs to be made immediately clear (to the medical student—I.S.S.) is that whether or not there are etiologically significant social and psychological factors, every time a physician and a patient meet the social and psychological interplay between them has a significant influence upon the patient's thinking and motivation regarding his health." But their recommendation, or suggestion, about how best to achieve student understanding of the importance of physician-patient relations, and their final omission of how to assure that the attending staff (as "more experienced teachers") will help the house staff physician not "to neglect the interpersonal relations aspects of patient care" reveal, I believe, a failure to come to grips with the crucial facts in this educational problem.

Looking first at the teaching of medical students, Brant and Kurner correctly underscore that "the realm of physician-patient relations by its very nature" cannot be taught didactically, with formulae, text, and diagrams. Positively, they suggest demonstration by the clinical teacher of the development of a "communicative relationship" with a patient. This, it is hoped, will convince the student of the importance attached to effective communication, because he admires and respects his teacher. In addition, through his clinical years, the

student is to be judged in terms of the way he develops human relations with patients, as well as on technical matters.

But we are dealing here with education for change in attitude and behavior, a painful matter for the learner and a complex task for the teacher. If the medical student is to look at his long-ingrained reactions to others, his ways of responding to those who appeal to him for help, and who covertly as well as overtly express anxiety, make demands, and challenge him, then a teaching technique far more refined than demonstration is essential.

The problem of instruction in medical education is indeed central to the hopes the authors express, even if it is not the focus of their studies or comments. What Russel Meyers wrote 5 years ago is most pertinent now. He touched on such points as the unbelievably small number of instructors who have a general background of pedagogic theory and communication skill; that may have never had so much as an introduction to general or educational psychology; that most medical educators deal with premedical and medical students as if motivation is already a *fait accompli*; that it does not appear to be generally appreciated that learning is eminently an active process; that it is important to abrogate authoritarianism and to dissolve the archaic distinctions between student and staff; and that communication processes, the educator's stock in trade, are legitimate objects of scientific study about which the field of group dynamics has uncovered valuable behavioral formations and described intra and interpersonal

techniques that permit humans to achieve greater control of their physical and psycho-sociologic environments.

What is omitted from the article under discussion is perhaps the most significant aspect of the problem of improving the teaching of comprehensive medical care. This is the question of whether those on an attending staff are in fact more experienced in achieving better physician-patient relations and whether one can expect them to know how to teach this to house staff physicians (and to medical students, in some settings).

My experience with some faculty members and attending staff physicians concerned with teaching students in a comprehensive care program leads me to believe that special educational efforts are first needed with those who would be teachers. And if the very process of helping these instructors improve their own relations with patients is sound, then perhaps they will be better prepared to teach.

In this area, the instructor himself faces obstacles similar to those which confront the student. To achieve his own prior necessary growth in understanding of interpersonal relations and in the art of creating an atmosphere in which patients' feelings and attitudes are more susceptible to change and in which patients can work through their own difficulties, the instructor must learn not to use his personality to gain satisfaction for himself, to control others, or to make them dependent and accepting of his suggestions. He must seek to help patients look more objectively at themselves and the realities of the situation in which they find themselves, rather than be gov-

erned by those "inevitable likes and dislikes which doctors and nurses experience toward different patients" as Bernard C. Meyer has recently put it.

For the instructor to change, emotional and educational support is necessary. Instructors, as students, in common with all need to be able to talk without fear of judgment, to uncover feelings and perceptions without fear of reprisal, to be aggressive or to withdraw, to like or not like what is going on, to express or not express inner feelings. Anyone who would seek to work with a "faculty" in this area would need to be sensitive to his role of setting up learning situations where necessary, instead of feeling it necessary to "teach."

This is not as easy as it sounds. Some individuals are especially insistent that they "get somewhere," that they "learn something" and not "just sit here wasting time." They want to see the immediate application of whatever is happening. This often serves as a barrier to learning. Rather than go through the more difficult task of learning from an analysis of experience and personal experimentation, demands are made that their teacher "teach" the right answer, even though all evidence indicates the futility of such an approach.

There has been an increase in medicine's sensitivity to the psychological aspects of illness and health. Answering the questions about the human individual as patient and doctor is complex, but so is the problem of translating these answers into training methods and clinical skills. Irving S. Shapiro, Ph.D. SUNY, New York.

Book Reviews

K. E. Penrod
Book Review Editor

The Student-Physician:

By Robert K. Morton. Published by the Harvard Univ. Press. 360 pp with index.

This volume is the first serious study by sociologic techniques on the medical student. The title, *The Student Physician*, is particularly apt since a large part of the book is concerned with the student's attitudes and goals and the process by which he evolves through education and training to think, feel and act as a physician. Students and faculty at Cornell, University of Pennsylvania and Western Reserve participated in the study which was supported, as have so many significant contributions to medical education, by the Commonwealth Fund.

Part 1 deals with the theoretical and historical context of the studies. It raises such questions as what the student thinks it means to be a physician, which roles he considers indispensable and which secondary, how the student feels he measures up to the physician's status and what professional values does he as a young physician consider important in his relations to society. Many of the values and norms in the practice of medicine are itemized and the quandries produced pointed out. The authors emphasize that their social science studies should be clearly distinguished from technical evaluations of medical education which examine curricula, facilities, and staff. The authors have placed emphasis upon the student, his individual qualities and the correlations with his performance in medical school.

Part 2 is concerned with career decisions, when and why the student decided to study medicine, the age at which this career was first considered, the influence of physicians in the family. A surprising number of students say they decided on medicine while they were still children. The final decision was most often reached during early college years. The students who entered an eastern medical school are compared with those who entered a law school at the same time. Medical students decided on their careers much earlier than did law students. Medical students found their undergrad-

uate studies surrounded by a more competitive atmosphere than did law students. The trend toward specialization as students proceed through Cornell Medical College has been studied.

Part 3 examines the processes of attitudinal learning. It is surprising that many students have a particular professional image in mind as they enter medical school. The requirements of their patients exerted a strong influence on the development of a professional self-image by the student. The preferences of students for types of patients was examined. It was concluded that the neutrality of fourth-year students toward certain attributes of patients stems from a feeling that they have already learned the important tasks of the physician in earlier years. The complex processes by which a student is trained to deal with different types of uncertainty he will encounter later as a practicing physician have been examined. Such uncertainties are the limitations in current knowledge, the imperfect mastering of what is known in various fields, and the experiences through which the student encounters uncertainties.

Part 4 studies in detail the Cornell Comprehensive Care and Teaching Program. The original concept of the program and the changes it has undergone are described. The range of patient contacts, the continuity of care and the coordination of services are described.

The appendix described research in progress and comments on significant tests. The questionnaire for medical students is given in full and commented upon.

This book should be studied along with the source material compiled for the Teaching Institutes of the Association of American Medical Colleges held in 1956 and 1957. The Proceedings of these Institutes are being published in the *Journal of Medical Education*. This volume has a good bibliography which is found as footnotes on each page. The volume should be of particular interest to medical educators. It should also be of value to administrators in universities, particularly Deans of Liberal Arts

Colleges, preprofessional counselors, sociologists and psychologists. Certain segments of the practicing medical profession concerned chiefly with organizational problems in medicine at national, state or county level, such as liaison committees with medical schools, specialty boards, and organizations which set the criteria for evaluation of residency programs. The foundations and government agencies concerned with education in general and medical education in particular should find the material stimulating. It is doubtful that premedical or medical students or house officers will purchase the book. George T. Herrell, M.D. Dean, Univ. of Fla. College of Medicine.

The Diagnosis and Treatment of Pulmonary Tuberculosis

By Paul Dufault, M.D.; A. Reynolds Crane, M.D., and Oscar Feinsilver, M.D. \$9.00. Pp. 426, with index. Lea & Febiger, Philadelphia.

The senior author of this book is medical director of the Rutland Sanatorium which was the first public sanatorium established on this continent. It seems quite fitting that this should be the case, for the sanatorium era in the treatment of tuberculosis which began with the turn of the century may well be drawing to a close to be replaced by the antimicrobial era. If such does come to pass then it shall be more important than ever to emphasize the teaching of tuberculosis to our undergraduate medical students since the diagnosis and treatment of this disease will fall largely in the hands of the regular practitioners rather than the specialist in a sanatorium.

It is obviously necessary in any small volume that the contents be condensed and at times perhaps over-simplified, but nevertheless this is a clearly and interestingly written book that should serve well both the student and the teacher. The outline followed is a conventional one covering the history of the disease, our knowledge concerning the tubercle bacillus, laboratory aids, sensitivity, immunity, examination of the patient, general and specific therapy, and tuberculosis of other parts of the body than the lungs.

There is an excellent chapter on Radiological Examination of the chest and I would agree with the author that basic training in X-ray diagnosis is far more helpful than learning to determine

the width of Kronig's isthmus. There is a clearly written chapter on Evaluation of Pulmonary Function and the section on Pathology of Tuberculosis is excellent. Perhaps the most valuable chapter at least at the moment, deals with antibiotic and chemotherapeutic agents, as we know and use them today. I feel that excessive space is devoted to methods of treatment which are probably more of historical interest than of modern importance. The section on differential diagnosis and diseases of the lungs other than tuberculosis is extremely brief and somewhat dogmatic. However, all chapters are followed by carefully chosen references to appropriate articles in the comparatively recent literature which is of great help in encouraging more detailed study. All in all, I think this is a book that should be recommended to medical students as a concise, basic text on tuberculosis.

E. E. Menefee, Jr., M.D.
Duke University

Human Histology

By Leslie B. Arey, Professor Emeritus of Anatomy, Northwestern University. Pp. 237, with index. W. B. Saunders Co., Philadelphia.

There is on the present American scene in medical education a deliberate attempt to efficiently organize and present to the student information in a clear-cut outlined fashion. This approach may be due to the fact that ever-increasing knowledge gained by modern research is so vast it becomes imperative to handle information in such a fashion. "Human Histology," a textbook in outline form follows admirably this course. Texts designed to present all information have become encyclopedic in nature. The book under consideration is a new departure in the presentation of histological information. Freshmen medical students will find it a delight to use. It is convenient and usable in the laboratory, bringing to the material under observation, an organization that permits rapid analytical approach. This enables the student to follow through on his own without being "spoon fed" by a laboratory assistant. The book presents an outline of the microscopic anatomy of the human body in such a way that the material covered in lectures by slides and other visual aid material is consolidated, yet with this abbreviation, the single-line sentences are of such a nature that the student's mem-

ory is effectively jogged. Each system or organ is treated under the following main headings:

1. General features
2. Structural plan
3. Detailed structure
4. Appearance in sections
5. Diagnostic features
6. Functional Correlations
7. Regenerative abilities

With sub-headings and simple statements under these, the whole of microscopic anatomy is well covered. This plan in no way slights the opportunity to point out at all levels of organization the great gaps in our knowledge, and to encourage young people to become investigators by arousing their curiosity. Instead of taking up each organ in its organogenesis, there is a short section dealing with problems entitled "Foreword on the nature and origin of organs," which summarized the origin of each from the germ layers.

The instructor will find this a valuable tool, if for no other reason it organizes his lecture material.

Whether the student will come up lacking in fundamental knowledge of histology using this book as his only text depends upon the instructor. With well planned lectures that have been adequately illustrated and documented with recent results of investigation no lack of information should occur. Without such action on the part of the instructor, the average student will flounder considerably in his attempt to understand the exciting study of microscopic anatomy. The book does possess not only a core for the basic information, but permits in the hands of imaginative teachers an opportunity to experiment in teaching, even to the extent of using special problems because of the efficient use of time afforded by the outline.

Paul G. Roofe, Ph.D.
Univ. of Kansas

ABSTRACTS

Practical Use of the Office Laboratory and X-Ray, Including the Electrocardiograph

Paul Williamson. The C. V. Mosby Company, St. Louis. 1st Edition, 1957. Pp. 216.

The useful information to be gained from the small office laboratory and x-ray is far more extensive than many physicians achieve with such equipment. Proper interpretation of tests and films is the key to successful use of the office laboratory and x-ray and it is to this

end that this book was written. Many times there is a gross difference between what the results seem to mean and what they actually do mean. For this reason interpretation is emphasized. This book is not a compendium of advanced techniques. The writer has assumed that the reader has a reasonable knowledge of the basic techniques and presently owns books devoted to exact methodology. The emphasis is placed on what the results mean and common sources of error. One purpose of this book is to separate useful procedures from the useless and the factual from the assumed. The basic equipment needed to carry out the procedures discussed in this book consists of an electrocardiograph, a fluoroscope, an x-ray machine capable of an output of 100 kvp at 100 ma, a good microscope, a photoelectric colorimeter, a centrifuge, chemical apparatus, sedimentation rack and a few other similar items.

Clinical Electrocardiography

Robert P. Grant. McGraw-Hill Book Company, Inc., New York. 1st Edition, 1957. Pp. 318.

It is not generally realized that there are two quite different methods for using vector analytic methods in clinical electrocardiography. In the first method, four body surface electrode locations are used to define what is believed to be properties of the resultant electrical forces actually generated within the heart. In the other method the vector is used simply as a way for integrating and schematizing the information contained in the various leads of the clinical tracing. The vector becomes in effect a three dimensional plot of magnitude against the three dimensions of space. It is the latter approach with which this book is concerned. These new vector methods are conceived as supplements to rather than replacements for the older and more familiar "pattern" methods of interpretation. This volume is an outgrowth of a monograph written in collaboration with Dr. E. Harvey Estes, Jr., and privately published in 1949 for the medical students and staff of Emory University Medical School. Later, in 1951, the Blakiston Company published it under the title "Special Vector Electrocardiography." The present book is a new effort and bids to fulfill the role of a textbook in clinical electrocardiography by including many aspects of clinical electrocardiography

which were not covered earlier. Relevant electrophysiology has been added in as non-technical a form as possible, with particular attention to the needs of the beginner.

**Physical Examination
in Health and Disease**

Rudolph H. Kampmeier. F. A. Davis Company, Philadelphia. 3rd Edition, 1957. 736 pages.

This textbook was written for 2nd year medical students. It is designed to set the pattern for good life-long practices in the study and examination of the patient by every practitioner of medicine. In general, the plan of presenting material in this book is: the normal and its variations followed by a section or chapter on the abnormal. Neurological examination is undifferentiated from other aspects of physical examination and therefore scattered throughout the text. In this revision new material is introduced in certain areas, changes are made to clarify questionable statements, and the inevitable errors which creep into any first edition are corrected.

**Rogers' Inorganic
Pharmaceutical Chemistry**

Taito O. Soline and Charles O. Wilson. Lea and Febiger, Philadelphia. 6th Edition, 1957. 673 pages.

This textbook is written for students in pharmacy. It is revised to be used advantageously with United States Pharmacopoeia XV and the National Formulary X. The text is organized on the basis of the Periodic Table. New chapters on atomic structure and solutions have been added to provide a brief review and enable a better understanding of chemical phenomena.

**Orthopedics for the
General Practitioner**

William E. Kenney and Carroll B. Lawson. C. V. Mosby Company, St. Louis. 1st Edition, 1957. 399 pages, 180 illustrations.

This book is designed to provide a quick reference in problems of orthopedics' surgery for the non-specialist. The arrangement of the book is founded upon two fundamental bits of information obtained from the history: the complaint of the patient and the anatomic location about which the complaint is made. This book is so organized that the doctor can refer to that chapter dealing with the anatomic location pointed out by the patient and there find a list of

usual complaints pertaining to such a location, with the likely diagnosis, and treatment. Those areas which might contain special difficulties or hidden dangers also are indicated. By using this book, a doctor should be able to arrive at a diagnosis and outline his treatment with a minimum loss of time. The book should aid not only general practitioners, but also pediatricians. One chapter is devoted specifically to conditions in childhood.

Medical Radiation Biology

Friedrich Ellinger. Charles C. Thomas, Springfield, Illinois. 1st Edition, 1957. Pp. 692, 4600 references.

This book is based on twenty-five years experience on the part of the author. It has been his intention to indicate in this book the rationale on which the role of radiation as a health hazard and as a therapeutic agent is based rather than to provide a text on radiation therapy. The book is written for all physicians, not just specialists in radiology. It is the hope of the author that this book may help to achieve for medical radiation biology a proper place in the undergraduate and postgraduate teaching curricula in the medical schools.

Manual of Pediatric Physical Diagnosis

Lewis A. Barness. The Year Book Publishers, Inc., Chicago. 1st Edition, 1957. Pp. 170.

This manual originated as a series of mimeographed notes to second year medical students at the University of Pennsylvania School of Medicine. These notes on pediatric physical examination expanded as no suitable text for the course was available. Now the material has been expanded slightly further and put in a paper-back book form.

Allergy in Pediatric Practice

William B. Sherman and Walter R. Keefer. The C. V. Mosby Company, St. Louis. 1st Edition, 1957. Pp. 320.

A large proportion of the infants and children suffering from allergic diseases are necessarily treated by general practitioners and pediatricians without special training in allergy. This book is intended to offer such physicians practical aid in the diagnosis and treatment of these conditions. It presents in detail the views and methods the authors have found most useful in actual practice. Most of the material included is familiar to, and accepted by, the majority of spe-

cialists in the field. A certain amount of basic scientific background is included. It is believed that this knowledge is essential for intelligent use of the actual diagnostic and therapeutic methods. The references cited are largely confined to review articles and books rather than original sources.

Practitioners' Conferences

By Claude E. Forkner. Appleton-Century-Crofts, Inc., New York. Volume 6, 1957. Pp. 375.

The present volume constitutes the 6th in the series and continues the policy of assembling in readily available form the best opinion available in the New York area on the subjects considered. As in the past, an effort has been made to keep these practical conferences on a clinical level but at the same time to balance them with panel members who represent the basic sciences. In this way these conferences have attempted to provide a challenge for the clinician and a basis of understanding for the practicing physician. A unique feature of these clinical conferences is that the panel members have represented staff members of other hospitals and medical schools than just those of the New York Hospital-Cornell Medical Center. Another unique feature of these conferences is that they have been focused on the physicians who are not members of the Medical Center. They have had as their principle purpose that of providing physicians outside the Medical Center with the advantages of a great teaching institution. The present volume comprises 15 conferences.

Introduction to Biostatistics

Hulda Bancroft. Hoeber-Harper, New York. 1st Edition, 1957. Pp. 205.

This textbook represents the third revision of a series of mimeographed notes prepared for use in teaching of biostatistics to sophomore medical students at Tulane University. As originally written, it was used in a course covering approx-

imately 48 hours, of which 15 were lectures and the balance supervised laboratory work. The book was written for medical students and practicing physicians who frequently have little training in mathematics and the presentation is in simple non-technical terms. No knowledge of mathematics beyond elementary high school algebra is required for understanding. Since the book is to be used primarily for the medical profession, illustrations in the text and examples at the end of each chapter have been taken almost entirely from clinical medicine.

BOOKS RECEIVED

Adventures in Medical Education: G. Canby Robinson, M.D. Harvard University Press. Pp. 338 with index. \$5.00.

The Annual Survey of Psychoanalysis: John Frosch, M.D. and Nathaniel Ross, M.D. International Universities Press. Pp. 770 with index. \$12.00.

Clinical Heart Disease: Samuel A. Levine, M.D. W. B. Saunders Company. Pp. 673 with index.

Cunningham's Manual of Practical Anatomy, Vol. I.—12th ed. Revised by J. C. Brash, M.D. Oxford University Press. Pp. 394 with index. \$6.00.

Doctors in Gray: H. H. Cunningham, Louisiana State University Press, Baton Rouge, La. Pp. 230 with index. \$6.00.

The Early Diagnosis of the Acute Abdomen: Zachary Cope, M.D. Oxford University Press. Pp. 188 with index. \$4.50.

Gynecologic and Obstetric Pathology with Clinical and Endocrine Relations: Emil Novak, M.D. and Edmund R. Novak, M.D. W. B. Saunders. Pp. 650.

The Neuroses and Their Treatment: Edward Podolsky, M.D. Philosophical Library. Pp. 555. \$10.00.

Office Gastroenterology: Albert F. R. Andressen, M.D. W. B. Saunders Co. Pp. 707 with index.

A Parent's Guide to Children's Illnesses: John Henderson, M.D. Duell, Sloan & Pearce, Inc. Pp. 388 with index. \$4.75.

Preventive Medicine: Hugh Rodman Leavell, M.D. and E. Gurney Clark, M.D. McGraw-Hill Book Co., New York. Pp. 689 with index. \$10.00.

A Textbook of Clinical Neurology: Israel S. Wechsler, M.D. W. B. Saunders Co. Pp. 782 with index.

Therapeutic Heat: Sidney Licht. Elizabeth Licht, New Haven, Conn. Pp. 466 with index. \$12.00.

Items of Current Interest

Annual Congress on Medical Education and Licensure

More than a thousand medical educators met in Chicago Feb. 8-11 at the 54th Annual Congress on Medical Education and Licensure to define the present problems of medical education and thus be able to plan more effectively for its needs in the future.

The Congress was sponsored by the American Medical Association's Council on Medical Education and Hospitals, the Federation of State Medical Boards, and the Advisory Board for Medical Specialties.

Dr. Leland S. McKittrick, chairman of the Council on Medical Education and Hospitals, presided at the opening session and outlined the purpose of the Congress. He asked, "Are those responsible for supplying medical needs to the people of this country aware of what these needs will be in the foreseeable future—in the next 15 or 20 years—and are proper and effective efforts being made to meet them?" Another question which he posed to the Congress was, "Are we developing too many top flight generals able to care for the relatively few patients with complicated medical and surgical conditions and not enough foot soldiers trained to adequately care for the greater proportion of our population?"

Dr. David B. Allman, president of the American Medical Association, also took up the issue of the economic and social changes that have developed recently and how the medical educators are to cope with them. Dr. Allman stated that he believes the medical profession is fully aware of the situation and should meet the challenge by understanding what is happening. He said it is a question of whether or not medical education

facilities can keep up with the growth and needs of the population today. At the annual banquet held by the Federation of State Medical Boards, Dr. Allman further discussed two recent developments in medical education which may influence future physician licensing procedures—the recent organization of the Educational Council for Foreign Medical Graduates, which will evaluate foreign medical graduates wishing to come to the United States, and the Johns Hopkins School of Medicine experiment to reduce the years spent in medical schools.

Dr. Ward Darley, executive director of the Association of American Medical Colleges opened the Monday morning session with the subject, "Undergraduate Medical Education and the Changing Status of Patients." He explained that higher incomes and medical insurance have enabled the patient to procure private care or have it purchased for him, thus doing away with socio-economic inadequacy as the factor which forces patients to the teaching services of our medical schools and hospitals.

Dr. Darley predicts that the indigent patient, as we know him today, will disappear from the scene in a few years, and that now is the time to strengthen and improve the system of medical education in order to adjust to these changes. He suggested that all individuals, the financially independent as well as the insured, must be eligible for care in the teaching institutions. He further emphasized that there is every reason for placing all students of medicine in a responsible relationship with individuals, both sick and well, from all walks of life, in their homes as well as in the out-patient or in-patient

department of the hospital. It was also Dr. Darley's belief that the school of medicine and its constellation of programs, its students, patients, faculty, facilities, and financing should be brought under the same kind and degree of control that the university exercises over its other colleges and programs.

Workshop Conferences

On Sunday afternoon, four workshop groups considered the changing dimensions of population, society, economics, and medical knowledge and their effect upon medical education. Representatives at these workshops came from the fields of sociology, political science, higher education, medical education, medicine, business, economics, labor and agriculture.

Dr. Vernon W. Lippard, dean, Yale University School of Medicine, reporting on the results of the population workshop, stated that the problem of increased production of physicians to maintain pace with the increasing population is an urgent one and will require the establishment of additional medical schools. In planning for the location and curriculum of these schools the workshop agreed that sociological and scientific trends, not just change and tradition, must receive major consideration.

Dr. W. Clark Wescoe, dean, University of Kansas Medical School, reported on the society workshop and outlined the significant sociological trends of the day; suburbanization, a more or less migratory manner of modern life, a continuing emphasis on early marriage, and a continuing increase in industrialization. The workshop saw a need for higher quality industrial health programs, and a greater need for family physicians in contrast to specialists in narrow fields.

Reporting on the economy workshop, Dr. John Z. Bowers, dean, University of Wisconsin Medical School, pointed out that the standard of living doubles every 25-30 years. The

workshop cited the fact that the "underprivileged class" is gradually disappearing due to increased incomes, and consequently, people are demanding more medical services, resulting in the need for a larger number of physicians and also producing a greater demand upon hospitals. The participants pointed out that there is a need for greater financial support for all of our medical schools. It was suggested that tuition be increased to more realistic figures to cover a larger percentage of the total cost of running a medical school.

The changing dimensions of medical knowledge, the fourth workshop, was reported by Dr. Victor Johnson, director of the Mayo Foundation. The workshop directed its thinking not only toward the influence of the extensive new developments and discoveries in medical knowledge in recent years, but also to the anticipated influences of possible future expansions and new dimensions. It was suggested that the medical school curriculum be sufficiently flexible so that changes in the medical climate of a country or the world can be readily reflected in medical school teaching and policies. It also emphasized that means of closer integration of faculties of medical schools with faculties or other divisions of the university are necessary even in institutions where medical schools are now located on the university campuses.

Dean's Meeting

The first dean's meeting of 1958 was held Saturday evening, Feb. 8, at the Palmer House, Chicago, in conjunction with the congress. Dr. Lowell T. Coggeshall, dean of the division of biological sciences, Chicago University, and president of the Association of American Medical Colleges, presided.

Among the business items, the deans authorized the development in the central office of a program to encourage individual memberships in the Association from the faculties of the medical schools.

Squibb Centennial Lectures

This year E. R. Squibb & Sons is celebrating the 100th anniversary of its founding by Dr. Edward R. Squibb. Seeking to commemorate their centennial in a manner of significance to medical science and education, they are offering each AMA approved medical school a Squibb Centennial Lecture during the 1958-59 academic year.

The Squibb Centennial Lecture Committee will select a panel of 18 medical scientists—about half American and half foreign specialists—of international reputation, and of known speaking ability. Both pre-clinical and clinical fields will be covered. Each scientist will lecture on his field in the medical schools in a designated geographical area.

Squibb will underwrite all expenses for the lectures and make all arrangements for travel and lodging.

Project in Medical Education

The University of Buffalo School of Medicine is sponsoring its first summer workshop of the Project in Medical Education and it is tentatively scheduled for the two week period from June 16 to June 28. Co-sponsor will be the Association of American Medical Colleges, and costs will be underwritten by the Commonwealth Fund, thus there will be no workshop tuition fee.

Its objective is to stimulate further interest in the acquisition of increased pedagogic skill among medical teachers as well as to provide a body of information and insight into the learning process upon which this skill might be built. Attempts will be made to distill out of the two year experience those things which have had the greatest impact upon participants and present them in a condensed fashion during the two week period. The schedule will be arranged in such a way that ample opportunity for group discussion and individual consultation with workshop leaders will be provided.

Attendance will be limited to 25 representatives of other medical schools.

Workshop leaders will be drawn from those who have held leadership positions during the last two years. Particular attention will be devoted to the dynamics of learning, the materials and methods of instruction and the evaluation of the outcomes of learning with lesser but still significant attention given to the background of higher education and the nature of the medical student.

One of the smaller dormitories has been assigned to the workshop for this two-week period and participants can be housed there also. Their families will be welcome.

Military Status of Medical School Faculty Members

On September 18, 1957, representatives of this Association and the A.M.A. met with representatives of the Office of Defense Mobilization to discuss the military status and obligations of medical school faculty members. The lack of current information for determining the impact of a mobilization on medical school faculties was emphasized. Accordingly, representatives of the A.A.M.C. and the A.M.A. agreed to endeavor to obtain the necessary data to answer some of these important questions. Subsequently, a letter from the Office of Defense Mobilization directed to the Executive Secretary of the A.A.M.C. requested information on a procedure for determining the impact of mobilization on medical school faculty members.

On January 24, 1958, a liaison subcommittee on Medical Education in Time of National Emergency convened at the Palmer House in Chicago. The following members were designated to the Committee from the A.M.A.—Dr. Ward Allen, Dr. H. English, Dr. Richard Meiling, and Dr. Edward Turner. Representing the A.A.M.C. were Dr. Stockton Kimball, who served as Chairman of the

Committee, Dr. Stanley Olson, Dr. John Youmans, Dr. John Bowers, and Dr. Ward Darley. Dr. Meiling represented Dr. Harold Diehl, Chairman of the Council on National Defense of the A.M.A.

The Committee discussed at length procedures by which information might be gathered on the relationships between medical education and mobilization for National Defense. It was suggested* that a number of questions be posed for study by medical school deans and their associates. The relationship of the M.E.N.D. program to the general problem was considered.

In the very near future, the central office of the Association will communicate further details on this important meeting.

New Program With the U.S.S.R.

The United States and the Union of Soviet Socialist Republics announced that an agreement on exchanges has been reached. Exchange of scientists for purposes of lecturing and research are to be worked out by the respective Academies of Science. In medicine and agriculture there are multiple exchange visits covering a two-year period.

Both parties agree to provide for the exchange in 1958-1959 of eight medical delegations of five to six specialists for periods of two to six weeks to become familiar with research and achievement in the following fields: new antibiotics, microbiology, physiology and pharmacology of the nervous system, radiobiology, biochemistry, metabolic diseases, endocrinology, community and industrial hygiene.

Both parties recognize the desirability of providing for an exchange of delegations in the field of the manufacture of medical apparatus and instruments. Inquiries are being made in the drug field.

The Ministry of Health of the Union of Soviet Socialist Republics will send in 1958 to the United States

a group of Soviet medical scientists (3-4 persons) for a period of 2 to 3 weeks to deliver lectures and exchange experiences and will receive a similar group of United States medical scientists to deliver lectures and exchange experiences at the Institutes of the Academy of Medical Sciences of the U.S.S.R. and at medical institutes in Moscow, Leningrad, and Kiev.

Provisions will be made for the Central Scientific Medical Library of the Ministry of Health of the Union of Soviet Socialist Republics and corresponding medical libraries in the United States to exchange medical journals.

Both parties will promote the exchange of curricula, textbooks, and scientific pedagogical literature through the appropriate agencies of higher and secondary education and directly between educational institutions.

The Ministry of Health of the Union of Soviet Socialist Republics will arrange to make available the 1958 from 8 to 10 medical films for presentation in the United States. On a reciprocal basis, the United States will arrange to make available the same number of American medical films for presentation in the Soviet Union.

The Policy of the Department of State of the U.S.A. is strict reciprocity. Medical scientists from the U.S.A. visiting the U.S.S.R. would be expected to serve as sponsors for a comparable number of Russians for a comparable period of time. This represents a complete reversal of policy toward the U.S.S.R.

In both countries there are restrictions on travel. At the present time there are no funds available from government sources. However, individuals can obtain visas rather easily.

Abraham Flexner Award

At the 68th Annual Meeting of this Association the Abraham Flexner Award for Distinguished Service to

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Medical Education was established in recognition of his outstanding contribution to medical education. Subsequently, a committee under the Chairmanship of Dean Rolf Syvertson was established to receive and consider nominations for the Award. It was agreed that the Award should be given annually to an individual who has made an outstanding contribution to medical education.

This notice is to call for nominations for the Award which should be transmitted to Dr. Syvertson at Dartmouth no later than April 15, 1958 or to the office in Evanston. The nomination should be supported by a statement of about 1,000 words setting forth the reasons for the nomination.

Educational Council for Foreign Medical Graduates

The Educational Council for Foreign Medical Graduates will hold its first examination on March 25, 1958. The examination will be offered simultaneously in a number of Medical Colleges in the United States. Subsequently, a similar examination will be offered every 6 months. The examination on September 23, 1958, will be offered in 30-40 examination centers overseas.

Utilization of the Educational Council for Foreign Medical Graduates as a screening program for foreigners can be of considerable value to medical educators. Since the American Medical Association and the Association of American Medical Colleges no longer endeavor to accredit foreign medical schools, the Educational Council has a highly responsible role in this area.

MEND News

On January 1, 1958, MEND affiliation became official for 10 more medical colleges, raising the level of participation to 45 of the 86 medical schools (over 52%).

These schools will participate in a 6-month orientation phase, aimed

at acquainting them with MEND activities, prior to attaining full participation status. Included in their orientation program are a conference for coordinators in February, and a tour of Federal installations for deans and coordinators in March.

The 10 schools, and their coordinators, are:

Albert Einstein—

Marcus D. Kogel, M.D.

Bowman Gray—

J. Richard R. Bobb, M.D.

Columbia—

Richard J. Cross, M.D.

Howard—David M. French, M.D.

Iowa State—

Robert C. Hardin, M.D., Christian E. Radcliffe, M.D.

Miami—

Lloyd Newhouser, M.D., Winston

K. Shorey

Northwestern—

Edward S. Petersen, M.D.

Oklahoma—

James P. Dewar, M.D.

Rochester—

Herman Pearse, M.D.

Virginia—

William Sandusky, M.D.

Lederle Research Fellowships

The Lederle Laboratories Division of the American Cyanamid Company announced that it is making available to medical schools throughout the United States and Canada "Lederle Medical Student Research Fellowships" for the year 1958.

These Fellowships, in amounts not exceeding \$600.00 per year for any one individual, are intended to relieve in part the financial burden of students who desire to devote their summer vacations to research in the preclinical departments. Students who apply for these Fellowships must be of good scholastic standing and must have the consent of the faculty member under whose supervision their research is to be conducted. The selection of students to receive such awards will be made by the dean of the medical school.

Medical Research Appropriations

Medical research appropriations under President Eisenhower's budget for the fiscal year beginning next July 1, will be retained at approximately the current spending levels. The President asked Congress to appropriate \$411,183,000 to the National Institutes of Health, the exact sum allocated for the current fiscal year. Each of the various N.I.H. institutes will receive approximately the same allocations. In addition, N.I.H. will receive an allocation of \$30,000,000 for direct research grants not included in its budget.

WHO Study Group on Social and Preventive Medicine in Manila

The WHO Study Group on Social and Preventive Medicine which had been meeting at the Institute of Hygiene of the University of the Philippines, Manila, since October 16, closed on October 29. During the two-week meeting, participants consisting of deans of medical schools and professors of social and preventive medicine from Australia, Cambodia, China (Taiwan), Fiji, Hong Kong, Japan, Korea, New Zealand, the Philippines, Singapore, and Viet Nam discussed problems connected with undergraduate teaching in social and preventive medicine.

The meeting approved a report stating that the objective of teaching in social and preventive medicine should be to make students actively aware of social needs with respect to the medical services which they can offer and to acquaint them with the role of social organization in the genesis, course, distribution, prevention, and treatment of disease.

National Foundation for Infantile Paralysis

The National Foundation for Infantile Paralysis is again offering fellowships to postdoctoral investigators, teachers, graduate students, and experienced laboratory personnel with

the baccalaureate degree for participation in short courses in tissue culture.

Ventnor Foundation

The Seventh Annual Forum under the auspices of the Ventnor Foundation on the Dynamics of Democracy was held in Atlantic City, N.J., at the Hotel Morton, February 8-9.

The Forum is a part of an Exchange Program, sponsored by the Ventnor Foundation, in which recent graduates of German and Austrian medical schools are brought to the United States for a year's work. The purpose of the program is to give these doctors an opportunity to experience a discipline of medicine and a way of life different from that in their homeland as a means of "waging peace" through better mutual understanding. Fifty-one German and Austrian Exchangees attended the Forum.

Two other groups attended as guests of the Ventnor Foundation. One was a group of 12 French doctors working in the United States on an Exchange Program and the other was a group of 28 Foreign Fellows under the direction of Dr. Howard Rusk, studying at the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center.

Department of the Army

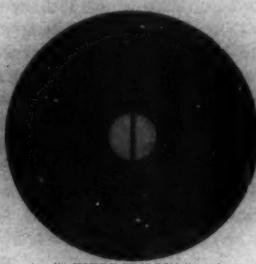
Dr. Jacques M. May, head of the department of medical geography of the American Geographical Society, gave the annual James Stevens Simmons Memorial Lecture at the Army Surgeon General's Medical Meeting at Sternberg Auditorium, Walter Reed Army Medical Center, on January 16, 1958. Dr. May spoke on "The Ecology of Disease in World Health."

Department of Health, Education and Welfare

Dr. Max M. Van Sandt, a Public Health Service medical officer now on

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CASE SUMMARY* A 39-year-old married woman with a history of slight dysmenorrhea and staining intermittently superimposed on a regular 28-day cycle was placed on a regimen of stilbestrol. Staining recurred in spite of increasing dosage. Nearly two months after institution of this therapy a pregnancy of 16-weeks duration was discovered. Spotting continued during the following two weeks. Stilbestrol was then discontinued and treatment with NORLUTIN begun. Staining ceased 3 days after beginning treatment with NORLUTIN. The pregnancy continued uneventfully to full term when she gave birth to a healthy male infant weighing 6 pounds, 5 ounces.

INDICATIONS FOR NORLUTIN. Conditions involving deficiency of progestogen such as primary and secondary amenorrhea, menstrual irregularity, functional uterine bleeding, endocrine infertility, habitual abortion, threatened abortion, premenstrual tension, and dysmenorrhea.

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*Abrahamson, D.: Personal communication.



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detail to the Federal Civil Defense Administration, has been assigned to the Office of Defense Mobilization effective February 1, the Service has announced. Dr. Van Sandt, now director of FCDA's Health Office in Battle Creek, Michigan, will serve in the Office of Defense Mobilization as chairman of the Health Manpower Task Force.

Surgeon General Leroy E. Burney has announced the promotion of Dr. James R. Shaw, Chief of the Public Health Service's Division of Indian Health, to the grade of Assistant Surgeon General, with a rank equivalent to that of Rear Admiral.

Dr. Shaw has headed the Federal Government's program for Indian Health since July, 1953, when he was detailed by the Service to the Department of the Interior as Chief of the Branch of Health in the Bureau of Indian Affairs. When the Indian health program was transferred to the Public Health Service in July 1955, Dr. Shaw was named Chief of the newly created Division of Indian Health.

"Hemo the Magnificent"

"Hemo the Magnificent," the Bell System Science Series television pro-

gram on blood and its circulation, will be seen again on Sunday, March 16, at 5:30 p.m., EST over the NBC network. The hour long color program was first telecast in March 1957.

Dr. Maurice B. Visscher, head of the department of physiology at the University of Minnesota, served as principal advisor on the production of the program. Dr. Chauncey D. Leake, Ohio State University, and Dr. Gordon K. Moe, State University of New York, were associate advisors. Dr. Allan Heminway of UCLA was consultant.

Increased Aid to Canadian Medical Colleges

The Association of Canadian Medical Colleges has presented a brief to the Ministers asking for an increase in the Federal budget for medical research of at least \$500,000. The paper suggests that grants should be on a three to five year basis and that they would most appropriately be administered by the Institution. The communication was occasioned by the fact that funds made available for the support of research in Canada have fallen short of justified requests by 1,000,000 dollars per year.

News from the Medical Schools

Alabama

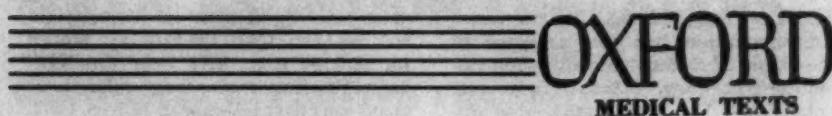
A distinguished array of state and national speakers took part in the dedication of the Lawrence Reynolds Library on February 2. Dr. Reynolds himself, one of the nation's top radiologists, made the presentation of his collection of rare medical books and other historical items, which is valued in excess of one-half million dollars.

Baylor

Dr. ARTHUR KIRSCHBAUM, professor and chairman of the department of anatomy, has been appointed to the Public Health Service's National Advisory Health Council.

British Columbia

The following appointments have been made for the 1957-58 academic year: Dr. JAMES S. TYHURST was ap-



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With contributions by Joseph T. Velardo; S. A. Asdell; Frank D. Allan; Herman Cohen; Sheldon C. Sommers; Ralph Reece; Arthur Sosval; and James H. Leathem.

Edited by Joseph T. Velardo, Yale University School of Medicine
Spring 1958 256 pages; illustrated tentatively \$12.50

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by Russell T. Woodburne, University of Michigan Medical School
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by Sir Zachary Cope, St. Mary's Hospital, Paddington
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Volume I. New Twelfth Edition. Upper and Lower Limbs.

Volume II. Thorax and Abdomen. Volume III. Head and Neck. Brain.

DISEASES OF THE NERVOUS SYSTEM, Fifth Edition

by Sir Russell Brain, London, Oxford

1955 1014 pages; illustrated \$11.50

PRINCIPLES OF RENAL PHYSIOLOGY

by Homer W. Smith, Ph.D., Sc. D., New York University College of Medicine
1956 250 pages; illustrated \$5.00

APPLIED PHYSIOLOGY, Ninth Edition

by Samson Wright, University of London

1952 1206 pages; illustrated \$12.75



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pointed professor and head of the department of psychiatry. Dr. Tyhurst, who has done a considerable amount of research into the problems of social and community psychiatry, was formerly associate professor of psychiatry at McGill University.

Dr. R. FOSTER SCOTT, who was formerly engaged in research in hematology at Washington University in St. Louis, was appointed assistant professor in the department of pathology.

Dr. HUGH MCLENNAN, formerly assistant professor at Dalhousie University, is now assistant professor in the department of physiology, where he will continue his studies in neurophysiology.

Dr. GEORGE I. DRUMMOND, formerly research associate at Western Reserve University, will apply his interest in biochemistry in research and as instructor in the department of pharmacology.

Cincinnati

During the past 18 months the endowment fund of the college of medicine has been increased by more than \$2,500,000, largely as the result of several major bequests.

Cornell

The study and treatment of mental and emotional disorders will be undertaken under a \$10 million bequest made by Anne Parrish, the novelist, who died six months ago. In the will filed for probate recently, this work is to be undertaken by the New York Hospital-Cornell Medical Center or by a separate corporation if the center organized one. As a result, the New York Hospital-Cornell Medical Center Foundation, Inc. has been organized.

The will provided that the \$10 million, which is free of taxes for such a purpose, would "be held and invested as a permanent fund or foundation for the improvement of the understanding of human illness involving the nervous system and its

functions, including mental and emotional disorders." The income is to be applied for study and research into the cause, prevention and cure of such illnesses; for the care of persons suffering from them; and for the education of neurologists, psychiatrists and others engaged in neurology and psychiatry.

Dartmouth

Dr. MANUEL F. MORALES has been appointed professor and chairman of the department of biochemistry. Dr. Morales has been head of the physical biochemistry division of the Naval Medical Research Unit. Collaborating with Dr. Morales in this department will be the newly appointed associate professors: Dr. LAFAYETTE H. NODA, Dr. DOROTHY JEAN BOTTS, and Dr. SIDNEY A. BERNHARD.

Duke

Dr. LENOX D. BAKER, orthopedic surgeon, has been named recipient of the 1957 Physician's Award of the President Eisenhower Committee on Employment of the Physically Handicapped. Given annually by the Committee, the award goes to the doctor who has made the greatest contribution to the physically handicapped during the past year. Dr. Baker was selected from among 37 nominees from throughout the United States.

Hahnemann

Dr. JOHN MALONE HOWARD has been appointed professor and head of the department of surgery, replacing Dr. WILLIAM H. MARTIN, who retires at the close of the 1958 academic year after 18 years as professor of surgery. Dr. Howard will become Hahnemann's first full-time professor of surgery.

Harvard

Two medical scientists who use the tools of atomic energy in the treatment and diagnosis of disease and in basic medical research have been named to associate professorships. Dr.

A. STONE FREEDBERG now is associate professor of medicine at the Beth Israel Hospital. Dr. **WILLIAM H. SWEET** has become associate professor of surgery at the Massachusetts General Hospital.

Professor **DONALD B. LINDSLEY**, University of California psychologist and authority on the human nervous system, will be the William James Lecturer on psychology for 1958-59.

Two professors have been granted leaves of absence to serve as consultants in medical education to the King George Medical College of Lucknow University, Lucknow, India. They are: Dr. **EDWARD CHURCHILL**, Homans Professor of Surgery and Chief of Surgical Services at the Massachusetts General Hospital; and Dr. **HERMANN BLUMGART**, professor of medicine and Chief of Medical Services at the Beth Israel Hospital. Their services to the Indian medical college are sponsored by the Rockefeller Foundation.

Jefferson

M. H. F. FRIEDMAN, professor of physiology, has been named head of the department of physiology.

Medical Evangelists

Dr. **WALTER E. MACPHERSON**, dean, left New York in January for a tour of the world, which will include stops in Europe, the Middle East, Asia, and the Far East. The purpose of the trip is to visit as many as possible of the 300 school of medicine alumni who have been or are now practicing as medical missionaries in Seventh-Day Adventist mission dispensaries, clinics, and hospitals.

Michigan

In the fall of 1957, Dr. **ROBERT LOVELL** was promoted from secretary of the medical school to assistant dean, and Dr. **C. J. TUPPER** was appointed secretary of the school. Dr. Lovell is an associate professor of internal medicine in the sub-section of allergy, and Dr. Tupper is an assistant professor of internal medicine and

director of the Periodic Health Appraisal Program.

Mississippi

Dr. **CIPRIJANS GARANCS** has been named associate professor of pathology at the Medical Center. A native of Latvia and a naturalized American citizen, Dr. Garancs graduated from the University of Heidelberg.

New York Medical College

Dr. **ARNE GOSTA JOHANNES RHODIN**, Swedish electron microscopist, has accepted an appointment as an associate professor in the department of anatomy. Dr. Rhodin, who is currently an assistant professor in the department of anatomy at Karolinska Institute, Sweden, where he also received his medical degree in April 1950, joined the staff in January.

Northwestern

HUTTON D. SLADE, chief of microbiology at the Rheumatic Fever Research Institute, Chicago, has been named associate professor of microbiology.

Ohio State

Location of the proposed new Ohio Rehabilitation Center on university property, south of the Health Center, has had the approval of the Board of Trustees. The new center, for which Ohio legislative appropriations total \$1,015,000, will be located adjacent to the east boundary of university property near Perry Street and north of Eighth Avenue. Federal funds, which include Hill-Burton money and National Institute of Health grants for research facilities, bring the amount available for the new structure to about \$1,250,000. The new center will not only permit increased service to severely disabled persons, but will provide an expanded program of education and research in co-operation with the university. Dr. **RALPH E. WORDEN** is the medical director.

Oklahoma

The Regents of the university have approved a contract for a \$500,000 addition to the University Hospitals. The addition will house a 2 million volt x-ray therapy machine. Other quarters in the new structure will be used mainly by the radiology and surgery departments.

Dr. HARRIS D. RILEY Jr., became head of the department of pediatrics, effective January 1, 1958. Dr. Riley came to Oklahoma from Vanderbilt University School of Medicine where he was assistant medical director, Vanderbilt Polio Respiratory and Rehabilitation Center.

Philippines

The retirement of the following faculty members has been announced: Dr. MARCIANO LIMSON, professor of anatomy and neuropsychiatry, on May 31, 1958; Dr. ROMULO GUEVARA, professor and head of pharmacology, on February 17, 1958; Dr. ANTONIO S. FERNANDO, professor of ophthalmology and otorhinolaryngology, on June 13, 1958, and Dr. REGINO J. NAVARRO, professor of clinical laboratory, on September 7, 1958.

South Carolina

Dr. KENNETH M. LYNCH, president of the medical college of South Carolina, received on November 13, the Southern Medical Association's Distinguished Service Award. It is the Association's highest honor, presented for outstanding contributions.

SUNY Syracuse

Dr. PHILIP KRAMER and Dr. ALAN S. FELDMAN have joined the faculty as associate professor of medicine and assistant professor of otolaryngology respectively. Dr. Kramer, whose appointment was effective February 1, also will be a staff physician in charge of the gastroenterology section of the Syracuse Veterans Administration Hospital. Dr. Kramer has been an assistant professor of medicine at

Boston University School of Medicine.

Dr. Feldman will be the first full-time audiologist in the department of otolaryngology. He will be a consulting and research audiologist, working at the Syracuse Dispensary and Gordon Hoople Hearing and Speech Center.

Vanderbilt

Dr. AMOS CHRISTIE, head of the department of pediatrics, has been selected to receive the John Phillips Memorial Award. He will be the second Vanderbilt professor to be so honored. Dr. Ernest Goodpasture, then head of the department of pathology, received the award in 1948.

Vermont

On January 2, 1958, JAMES H. BATES joined the staff of the medical college in a newly created position as executive assistant to the dean. His major responsibilities will be in the administrative aspects of medical research grants and postgraduate education. He will also work on an expanded public relations program in cooperation with the University of Vermont public relations office. For the past six years he has been executive director of the Vermont Tuberculosis and Health Association.

Yale

Dr. NELSON K. ORDWAY, professor of pediatrics at the University of North Carolina School of Medicine since 1954, has been appointed professor of pediatrics.

Dr. JEREMY N. MORRIS of London, England, has been appointed visiting professor of epidemiology from December until March 1958.

Dr. ROBERT H. GREEN has been appointed associate professor of preventive medicine. He was previously a member of the full-time faculty in the department of medicine at Yale from 1947 to 1953. His teaching and research will be concerned with influenza, and other respiratory viruses.

Publications

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association headquarters office, 2530 Ridge Avenue, Evanston, Ill.

Booklets

- Medical Education Today (\$1.50).
- Admission Requirements of American Medical Colleges—1957-58 (\$2.00).
- Fellowships, Funds and Prizes Available for Graduate Medical Work in the U.S. and Canada—4th edition, published 1954 (\$1.50).
- By-Laws of the Association of American Medical Colleges (Revised 1955).
- Minutes of the Proceedings of the Annual Meetings (1947-57 Minutes now available).
- Public Understanding and Support of Medical Education.

The Journal of MEDICAL EDUCATION

A monthly journal devoted exclusively to medical education.
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Journal supplements available:

- The National Health Service of Great Britain (\$1.00).
- Education of Physicians for Industry (\$2.00).
- Trends in Medical Practice (\$2.00).
- Support of Research by American Cancer Society (\$1.00).
- An Analytical Study of North Carolina General Practice 1953-54 (\$2.00)
paperbound; \$3.00, clothbound.
- Survey of Women Physicians graduating from Medical School 1925-40
(\$1.00).
- Suggestions for Supplementing the Medical Curriculum in Time of National
Emergency.
- Teaching Institute Reports (\$2.00 paperbound, \$3.00 clothbound).
- Report of the Conference on Preventive in Medical Schools (Report of the 1952
Institute).
- The Teaching of Physiology, Biochemistry and Pharmacology (Report of the
1953 Institute).
- The Teaching of Pathology, Microbiology, Immunology and Genetics (Report
of the 1954 Institute).
- The Teaching of Anatomy and Anthropology in Medical Education (Report of
the 1955 Teaching Institute).
- The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

Medical Audio-Visual Institute Publications

- Film Catalog, Fall 1955 and Supplements.
- Reprints from the Audiovisual News Section of the Journal of MEDICAL
EDUCATION.
- Films in Psychiatry, Psychology and Mental Health (available from the Health
Education Council, 92 Belmont Drive, Livingston, N.J.)
- Films in the Cardiovascular Diseases (Part I available from the American
Heart Assn., 44 E. 23rd St., New York 10, N.Y. (\$2.00).
Part II available from the Medical A-V Institute (\$2.00).

Publications of Related Organizations

- Hospitals Participating in the Matching Program 1958 (NIMP).
- Results of the Matching Program 1958 (NIMP publication).
- The Student and the Matching Program 1958 (NIMP publication).
- Medical College Admission Test—Bulletin of Information 1957 (Educational
Testing Service publication).
- Psychiatry in Medical Education—1951 Conference (\$1.00).
- The Psychiatrist: His Teaching and Development—1952 Conference (\$2.50).
(The above can be obtained from: American Psychiatric Assn., 1705 Massachusetts Avenue,
NW, Washington, D.C.).

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To obtain membership, fill out the application form below, append check for \$10, and return to the Association's central office at 2530 Ridge Ave., Evanston, Ill.

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What is the meaning of "kidney threshold"?

The "kidney threshold" for any substance is the maximum amount of it that the kidneys will tolerate *in the blood*...the excess will appear in the urine. "Desirable" blood components, such as glucose and plasma proteins (albumin, globulin, fibrinogen), have a high threshold and normally remain in the blood. "Undesirable" blood components, such as ketone bodies (acetone, acetoacetic acid, β -hydroxybutyric acid) and the metabolic wastes (urea, creatinine, uric acid), are low-threshold substances and are rapidly excreted into the urine.

Source—Best, C. H., and Taylor, N. B.: *The Physiological Basis of Medical Practice*, ed. 6, Baltimore, The Williams & Wilkins Company, 1955, pp. 448-450.

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The Personnel Exchange

Faculty Vacancies

PROFESSOR OF PATHOLOGY★IRAN

Applications are invited for the Chair of Pathology, University of Shiraz, Shiraz, Iran. Contract basis for 2-4 years. \$5,500 will be sent to home address in 12 months. A monthly salary of 25,000 rials will be paid (enough for himself and family to live comfortably in Shiraz). Air tickets will be provided for himself and family. Position should be filled by October 1958. Contract terms and information available by writing to: Dr. Zabih Ghorban, Chancellor of the University, Shiraz, Iran.

• **Pathologist:** To work in Surgical Research Department. Rank, salary, and possible dual appointment depend on qualifications. Primary responsibilities: Gastrointestinal problems and intravenous fat emulsions. Opportunity for own development. Isotope experience desired. Address: Department of Surgery, Louisiana State University School of Medicine, New Orleans, La.

• **Instructors in Anesthesiology:** Position will be available after April 1 1958 at University of Miami School of Medicine. Write J. Gerard Converse, M.D., professor in anesthesiology, University of Miami School of Medicine at Jackson Memorial Hospital, Miami 36, Fla.

• **Instructors in Physiology:** Full-time staff. Position available July 1, 1958 in department of physiology at state-supported medical school. Requirements: Ph.D. or M.D. Experience and interest in teaching at the medical school level. Training, capability and interest in independently conducted cardiovascular research. Duties: Lecture and laboratory presentation of physiology to medical students and nurses. Establish and develop program of research in cardiovascular physiology. Salary: approx. \$6000. Approximately half-time available for research. John M. Brookhart, Dept. of Physiology, Univ. of Oregon Medical School, Portland 1, Oregon.

• **UNIVERSITY OF BRITISH COLUMBIA**, Vancouver 8, B. C., Canada requires a full-time staff member in preventive medicine in the faculty of medicine. Applicants should be graduates in medicine with interest in epidemiological investigation. Salary and academic rank commensurate with training and experience. Address inquiries to: Dr. James M. Mather, Professor of Public Health.

• **Clinic Director:** Clinic Director to January 1959. Administrative and teaching post, while present director on leave of absence. Internal medicine background preferred but not essential. Address: J. P. Tolman, M.D., Dean, University of Nebraska College of Medicine, Omaha, Nebr.

• **Biochemists:** Ph.D. To take part in research projects on the biochemistry and physiology of the myocardium, with time available for independent work. In pathology department, with university appointment if qualified. Salary \$6-8000 a year. Address: V-64.

• **Anatomist:** Full-time position in mid-western medical school; teaching and research. Rank and salary dependent upon experience and qualifications but Ph.D. or M.D. degree minimal. Address: V-65.

• **Pathologist:** Associate in department of pathology. Position available immediately in an active clinical and teaching laboratory, in both pathological anatomy and clinical pathology. Opportunity for personal research and advancement. Private clinic with affiliated hospital and medical school affiliation. Apply to Administration, Guthrie Clinic, Sayre, Pa.

• **PRINCIPAL SCIENTIST:** Ph.D. in biochemistry for fully equipped radioisotope laboratory in 1000 bed hospital affiliated with medical college. Major function to develop research program. To be advisor for other biochemical research involving radioisotopes, and to supervise laboratory and personnel. Will have faculty appointment. Salary \$7,400-10,000. Address replies to: Radioisotope Service, Veterans Administration Hospital, Albany, N. Y.

• **ANATOMIST:** Assistant professor or instructor for medical and dental school teaching, prefer experience in teaching gross anatomy. Address: V-66.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

• **INSTRUCTOR:** Certified, 35, family. Experienced director of medical education, teaching, administration, practice. Special training: arthritis, research psychiatry. Military Service completed. Desires challenging, responsible, full-time opportunity. Address: A-313.

• **PATHOLOGIST:** Age 33, university trained, board eligible. Desires position in a teaching hospital. Address: A-314.

• **VIROLOGIST:** Ph.D., 33. Six years research and teaching experience. Background in relationships of viruses to cancer cells, also in tissue culture and cytology. Prefers teaching position allowing adequate time for research. Available about June, 1968. Address: A-315.

• **ANATOMIST:** Ph.D., male, 42, married. Nine years teaching experience in gross human anatomy. Desires teaching position in gross anatomy. Research interests in comparative morphology and functional anatomy. Address: A-316.

• **BIOCHEMIST-NUTRITIONIST:** Clinical chemist, Ph.D. In charge of medical and surgical research laboratories for 12 years. Experienced with the use of radioisotopes, clinical drug testing, and metabolic methods involving both man and animals. Member of American Society of Biological Chemists and Certified in Clinical Chemistry. Numerous publications. Desirous of affiliating with an active group. Address: A-317.

• **PHYSICAL BIOCHEMIST:** Ph.D. 1961. Original contribution: physical chemistry of proteins, thermodynamics and kinetics of biochemical reactions, chromatography, instrumentation. 2 years post-doctorate abroad. Career position—academic or research institute. Address: A-318.

• **ANATOMIST:** Dental degree. Presently assistant professor in charge of microscopic anatomy and oral histology and embryology in New England medical and dental schools. Desires change of locale for full-time teaching and research. Available September 1968. Address: A-320.

• **NEUROANATOMIST AND NEUROPATHOLOGIST:** Mature male. Wide teaching experience and broad research interests. Numerous publications, and grants. At present associate professor with no opportunity for advancement. Would prefer teaching and research position in South. Address: A-321.

• **ANATOMIST:** M.D., male. Presently associate professor. Teaching experience in microscopic anatomy. Publications. Desires change of locale for reasons of health. Seeks academic or research position in medical center. Address: A-322.

• **OBSTETRICIAN-GYNECOLOGIST:** Age 32, married with family. M.B., Ch.B. (Otago University, New Zealand), member of Royal College of Obstetricians and Gynaecologists. Desires academic post in the United States in obstetrics and gynecology, interests being clinical, operative, teaching and writing, with a little research. Present position, Senior Registrar in Ob-Gyn (senior resident) at The London Hospital, London, England. Address: A-323.

• **PATHOLOGIST:** Age 36, single. M.D. 1966, University of Belgrade Faculty of Medicine, Yugoslavia. Year rotating internship in Canada. Desire position as research assistant in American medical school or research institute. Prefer pathological physiology. Immigrating to USA. Address: A-324.

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• **ANATOMIST:** M.A. (Glasgow), M.R.C.V.S. (Edinburgh), M.B., Ch.B. (Glasgow). Former lecturer Scottish University, now in British Colonial University. Desires senior teaching post, U.S.A. or Canada where histological research facilities are available. Teaching experience: regional anatomy and histology; some neuroanatomy, embryology. Free September 1958. Address: A-328.

• **PARASITOLOGIST:** Ph.D., male, 38. Desires academic position with both teaching and research opportunities. Currently holding rank of Instructor and research associate. Teaching experience with medical, graduate, dental, nursing and undergraduate students. Research experience in cardiovascular physiology, aviation physiology and endocrinology. Publications. Address: A-328.

• **INSTRUCTOR:** Board eligible, teaching experience. Excellent recommendations, interested in a teaching position. Address: A-327.

• **SURGEON:** Cardiovascular-thoracic-general. 36; 7 years training university centers; MS (Surgery); research background physiology, pathology, cardiac and general surgery. Formerly Section Chief, VA teaching hospital. Completed Part I, ABS. Experienced in open cardiac procedures, hypothermia, extra-corporeal circulation. Desires full-time or part-time teaching position with clinical and laboratory research. Address: A-328.

• **SURGEON:** Cardiothoracic. Certified general and thoracic surgery. M.S. Surgery. Extensive clinical and experimental experience in open heart surgery. Publications. Desires full-time academic position. Available July. Address: A-328.

• **PREVENTIVE MEDICINE:** Age 32, M.D., Harvard, 1953, M.P.H., Harvard, 1957. Currently completing new 2-year program for teachers of preventive medicine at Harvard School of Public Health. Desires full-time association with department of preventive medicine. Available June 1958. Address: A-330.

• **OBSTETRICIAN SURGEON:** Age 43, F.R.C.S. British Subject, veteran. Desires academic post with hospital work in one of the smaller medical centers. Address: A-331.

• **PHYSIOLOGIST:** Age 34, M.B.B.S., M.Sc. (Med.). Ten years teaching and research experience in physiology. Interested in teaching and research with opportunity to complete Ph.D. degree. Prepared to work on stipend or fellowship. Address: A-332.

• **PHARMACOLOGIST:** Ph.D. Single. Instructor in medical college. Desires new teaching/research position with opportunity to complete studies for M.D. degree. Address: A-333.

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